

# SEQUENCE LISTING

<110> Haselbeck, Robert  
Wall, Daniel  
Gross, Molly

<120> BACTERIAL PROMOTERS AND METHODS OF USE

<130> ELITRA.010A

<150> 60/259,434

<151> 2000-12-27

<150> 09/948,993

<151> 2001-09-06

<150> 60/230,335

<151> 2000-09-06

<160> 68

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 556

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence map showing the Xyl-T5 fusion promoter  
and associated DNA sequences

<400> 1

```
gaccgtcata aaaaatttat ttgctttcag gaaaattttt ctgtataata gattcaagtt 60
agtttgttta ttaaattaac caactaaaat gtagaattcc gagctcgagc cggtagcccg 120
ggatcctcta gagtcgacct gcagccaagc ttgggctttt cagcctgata cagattaaat 180
cagaacgcag aagcgggtctg ataaaacaga atttgcctgg cggcagtagc gcggtgggtcc 240
cacctgacct catgccgaac tcagaagtga aacgccgtag cgccgatggt agtgtggggg 300
ctccccatgc gagagtaggg aactgccagg catcaaataa aacgaaaggc tcagtcgaaa 360
gactgggcct ttcgttttat ctgttggttg tcggtgaacg ctctcctgag taggacaaat 420
ccgccgggag cggatttgaa cgttgcgaag caacggcccc gaggggtggcg ggcaggacgc 480
ccgccataaa ctgccaggca tcaaattaag cagaaggcca tcctgacgga tggccttttt 540
gcgtttctac aaactc                                     556
```

<210> 2

<211> 168

<212> DNA

<213> Artificial Sequence

<220>

<223> CP25 fusion promoter

<400> 2

attaaatata aataacattc aaatgaatat taaataatta cagcagtctg agttataaaa 60  
tagatatctc ggaccgacat taaattcttg acagggagag ataggtttga tagaatataa 120  
tagttgtctc gagagttagt ttgtttatta aattaaccaa ctggacga 168

<210> 3  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> PCR primer

<400> 3  
tggcattcta cgactataac 20

<210> 4  
<211> 29  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> PCR primer

<400> 4  
gcgaattcta catttttagtt ggttaattt 29

<210> 5  
<211> 94  
<212> DNA  
<213> Escherichia coli

<220>  
<223> Oligonucleotide Xyl-T5

<400> 5  
gaccgtcata aaaaatttat ttgctttcag gaaaattttt ctgtataata gattcaagtt 60  
agtttgttta tttaaattaac caactaaaat gtag 94

<210> 6  
<211> 95  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Oligonucleotide Xyl-T5 complement

<400> 6  
aattctacat tttagttggt taatttaata aacaaactaa cttgaatcta ttatacagaa 60  
aaattttcct gaaagcaaata aaatttttta tgacg 95

<210> 7  
<211> 10929  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Vector pEP25

<400> 7

```
aagcttgcct gcaggtcgac gataaccaca taacagtcac aaaaccactc cttttttaaca 60
aactttatca caagaaatat tttggcattc tacgactata acttaaattt atatttttta 120
ctttataata tataattgat tatagaataa tgttgctcat atcgtttgcc aacatctagt 180
actcaaatta cactatgtta cacttggtta tattaaccga acttccctg tccaaattag 240
ataagaggta ataataaatg gaaaataatt ttatagtaaa tgaaaatgag aagcgtgtat 300
taaaacaaat tttcaataac agcaatattt cacgaacaca aatatcgaag aatttagaac 360
ttaataaagc tactatttct aacatttctga acaacttaaa acacaagagt ttagttaatg 420
aagtaggaga aggtaatagt actaaaagtg gtggacgaaa gcctatttta ctcgaaatta 480
acaaaaata tggctactat atttctatgg atttaacata tgattccgtt gaattaatgt 540
acaactactt tgatgctact atattaaagc aagattccta cgaattaaat gataaaaatg 600
taagcagtat attacaaatt ttaaaatcta atataaacgt ctcagaaaaa tatgatacgt 660
tatatgggtt acttggtata tctatatcca tacacgggat cggtgacgat gagcaaaaca 720
taatcaatct tccttttcat aaaaatgaga aacgcacatt taccgatgaa ttaaagtcac 780
tcacaaatgt tcctgtcgtt atagaaaatg aagcaaattt atcagcgcta tatgaaaaaa 840
gtttatatat taattcaaac ataaataatt tgattacttt aagtattcac aagggtatag 900
gcgctggcat cataataaat aaaaaacttt atcggtggctc aaatggagag gctggagaga 960
taggtaagac attgggtttg gaatctataa ataacaatga caacaaatat tataaaatcg 1020
aagatatatg ctccaagac gctttaatac agaaaataaa taatagggtt ggcgtcacat 1080
tgacgtttac agaactaatc caatattaca acgaaggaaa ttcaattggt gtcacatgaa 1140
ttaaacaatt tattaataaa atgacagttc tgattcataa tttgaataca caatttaacc 1200
cagacgctat ttatattaac tgccttttaa ttaatgaatt accaaatatt ttaaatgaaa 1260
ttaagagca attctcctgt ttttctcaag gcagtcacat tcaattacat ttaactacta 1320
atgtaaaaca agctacttta ttgggtggca ctttagcaat aatgcaaaaa acattaaata 1380
taaataacat tcaaatgaat attaaataat tacagcagtc tgagttataa aatagatatc 1440
tcggaccgct ttggcagttt attcttgaca tgtagtgagg gggctggtat aatcacatag 1500
ctcgagagtt agtttgttta ttaaattaac caactggatc cggaggaaca gctatgacca 1560
tgattacgga ttcactggcc gtcgttttac aacgtcgtga ctgggaaaac cctggcggtta 1620
cccaacttaa tcgccttgca gcacatcccc ctttcgccag ctggcgtaat agcgaagagg 1680
cccgacccga tcgccttccc caacagttgc gcagcctgaa tggcgaatgg cgctttgcct 1740
ggtttccggc accagaagcg gtgcccgaaa gctggctgga gtgcgatctt cctgaggccg 1800
atactgtcgt cgtccctcca aactggcaga tgcacgggta cgatgcgccc atctacacca 1860
acgtgaccta tcccattacg gtcaatccgc cgtttgttcc cacggagaat ccgacgggtt 1920
gttactcgct cacatttaat gttgatgaaa gctggctaca ggaaggccag acgcgaatta 1980
tttttgatgg cgtaactcg gcgtttcatc tgtggtgcaa cgggcgctgg gtcggttacg 2040
gccaggacag tcgtttgccg tctgaatttg acctgagcgc atttttacgc gccggagaaa 2100
accgcctcgc ggtgatgggt ctgcgctgga gtgacggcag ttatctggaa gatcaggata 2160
tgtggcggat gagcggcatt ttccgtgacg tctcgttgct gcataaaccg actacacaaa 2220
tcagcgattt ccatgttgcc actcgttta atgatgattt cagccgcgct gtactggagg 2280
ctgaagtcca gatgtgcggc gagttgcgtg actacctacg ggtaacagtt tctttatggc 2340
aggggtgaaac gcaggtcgcc agcggcaccg cgcctttcgg cggtgaaatt atcgatgagc 2400
gtggtggtta tgccgatcgc gtcacactac gtctgaacgt cgaaaacccg aaactgtgga 2460
gcgccgaaat cccgaatctc tatcgtgcgg tgggtgaact gcacaccgcc gacggcacgc 2520
tgattgaagc agaagcctgc gatgtcgggt tccgcgaggt gcggattgaa aatgggtctgc 2580
tgctgctgaa cggcaagccg ttgctgattc gaggcgttaa ccgtcacgag catcatcctc 2640
tgcattgcca ggtcatggat gagcagacga tgggtgcagga tatcctgctg atgaagcaga 2700
acaactttaa cgccgtgcgc tgttcgcatt atccgaacca tccgctgtgg tacacgctgt 2760
gcgaccgcta cggcctgtat gtggtggatg aagccaatat tgaaaccac gccatggtgc 2820
caatgaatcg tctgaccgat gatccgcgct ggctaccggc gatgagcgaa cgcgtaacgc 2880
gaatggtgca gcgcgatcgt aatcacccga gtgtgatcat ctggtcgtg gggaatgaat 2940
caggccacgg cgctaatac gacgcgctgt atcgtggat caaatctgtc gatccttccc 3000
gcccggtgca gtatgaaggc ggcggagccg acaccacggc caccgatatt atttgccga 3060
```

100303313301

tgtacgcgcg	cgtggatgaa	gaccagccct	tcccggctgt	gccgaaatgg	tccatcaaaa	3120
aatggctttc	gctacctgga	gagacgcgcc	cgctgatcct	ttgcgaatac	gcccacgcga	3180
tgggtaacag	tcttggcggg	ttcgctaaat	actggcaggg	gtttcgtcag	tatccccgtt	3240
tacagggcgg	cttcgtcttg	gactgggtgg	atcagtcgct	gattaaatat	gatgaaaacg	3300
gcaacccgtg	gtcggcttac	ggcgggtgatt	ttggcgatac	gccgaacgat	cgccagttct	3360
gtatgaacgg	tctggtcttt	gccgaccgca	cgccgcatcc	agcgcgtgacg	gaagcaaaaac	3420
accagcagca	gtttttccag	ttccgtttat	ccgggcaaac	catcgaagtg	accagcgaat	3480
acctgttccg	tcatagcgat	aacgagctcc	tgcactggat	ggtggcgctg	gatggtaagc	3540
cgctggcaag	cggtgaagtg	cctctggatg	tcgctccaca	aggtaaacag	ttgattgaac	3600
tgctgaact	accgcagccg	gagagcgccg	ggcaactctg	gctcacagta	cgcgtagtgc	3660
aaccgaacgc	gaccgcatgg	tcagaagccg	ggcacatcag	cgcctggcag	cagtggcgtc	3720
tggcggaaaa	cctcagtgtg	acgctccccg	ccgcgtccca	cgccatcccc	catctgacca	3780
ccagcgaaat	ggatttttgc	atcgagctgg	gtaataagcg	ttggcaattt	aaccgccagt	3840
caggctttct	ttcacagatg	tggattggcg	ataaaaaaca	actgctgacg	ccgctgcgcg	3900
atcagttcac	ccgtgcaccg	ctggataacg	acattggcgt	aagtgaagcg	acccgcattg	3960
accctaacgc	ctgggtcgaa	cgctggaagg	cggcggggcca	ttaccaggcc	gaagcagcgt	4020
tgttgcagtg	cacggcagat	acacttgctg	atgcggtgct	gattacgacc	gctcacgcgt	4080
ggcagcatca	ggggaaaacc	ttatttatca	gccggaaaac	ctaccggatt	gatggtagtg	4140
gtcaaattggc	gattaccggt	gatgttgaag	tggcgagcga	tacaccgcat	ccggcgcgga	4200
ttggcctgaa	ctgccagctg	gcgcaggtag	cagagcgggt	aaactggctc	ggattagggc	4260
cgcaagaaaa	ctatccccgac	cgccttactg	ccgcctgttt	tgaccgctgg	gatctgccat	4320
tgtcagacat	gtataccccg	tacgtcttcc	cgagcgaaaa	cggctctgcg	tgcgggacgc	4380
gcgaattgaa	ttatggccca	caccagtggc	gcggcgactt	ccagttcaac	atcagccgct	4440
acagtcaaca	gcaactgatg	gaaaccagcc	atcgccatct	gctgcacgcg	gaagaaggca	4500
catggctgaa	tatcgacggt	ttccatatgg	ggattggtgg	cgacgactcc	tggagcccgt	4560
cagtatcggc	ggaattccag	ctgagcgccg	gtcgctacca	ttaccagttg	gtctggtgtc	4620
aaaaataata	atgtcgaggg	taccgagctc	gaattccttt	tagtccagcc	gagcgcttag	4680
tgggaatttg	taccctttat	cgatacaaat	tccccgtagg	cgctagggac	ctcttttagct	4740
ccttggaagc	tgtcagtagt	atacctaata	atttatctac	attcccttaa	gtaacgtgta	4800
actttccaaa	tttacaanaag	cgactcatag	aattatttcc	tcccgttaaa	taatagataa	4860
ctattaaaaa	tagacaatac	ttgctcataa	gtaacggtac	ttaaattggt	tactttggcg	4920
tgtttcattg	cttgatgaaa	ctgattttta	gtaaacagtt	gacgatattc	tcgattgacc	4980
cattttgaaa	caaagtacgt	atatagcttc	caatatattat	ctggaacatc	tgtggtatgg	5040
cgggtaagtt	ttattaagac	actgtttact	tttggttttag	gatgaaagca	ttccgctggc	5100
agcttaagca	attgctgaat	cgagacttga	gtgtgcaaga	gcaaccctag	tgttcggtga	5160
atatccaagg	tacgcttgta	gaatccttct	tcaacaatca	gatagatgtc	agacgcattg	5220
ctttcaaaaa	ccactttttt	aataatttgt	gtgcttaaat	ggtaaggaat	actcccaaca	5280
attttatacc	tctgtttggt	agggaattga	aactgtagaa	tatcttggtg	aattaaagtg	5340
acacgagtat	tcagttttta	tttttctgac	gataagttga	atagatgact	gtctaattca	5400
atagacgtta	cctgttttact	tatttttagcc	agtttcgctc	ttaaatgccc	tttacctggt	5460
ccaatttcgt	aaacgggtatc	ggtttctttt	aaattcaatt	gttttattat	ttggttgagt	5520
actttttcac	tcgttaaaaa	gttttgagaa	tattttatat	ttttgttcat	gtaatcactc	5580
cttcttaatt	acaaattttt	agcatctaata	ttacttcaa	ttcctattat	acaaaatttt	5640
aagatactgc	actatcaaca	cactcttaag	tttgcttcta	agtcttattt	ccataacttc	5700
ttttacgttt	ccgccattct	ttgctgtttc	gatttttatg	atatggtgca	agtcagcacg	5760
aacacgaacc	gtcttatctc	ccattatatc	tttttttgca	ctgattgggtg	tatcatttcg	5820
tttttctttt	tgtgcgccta	aatttcccac	aatcactcac	ttctttctat	ttcttcttat	5880
tcttatttta	tcatacaaaa	tcacaaatca	cttggtgattt	gtgataagtg	atgtgtgatt	5940
aatatataaa	agccctcttt	aaagggtttt	tatgtttatt	ttgagaaaga	tataaaatca	6000
atatatccct	tttctccgat	ttttacaacg	gcattgtagg	actttctatc	tttcgttttg	6060
attcctttta	ccagggtttc	ttttccctct	agtaattctt	ttacatttgt	tttggtgagt	6120
tttttctttc	taaaatgttc	agctaaagta	aacttacatt	caggataatt	tgaacaacca	6180
taaaacgatt	tttttaatac	aatattgttg	ccacacttag	gacattttcc	tacaataactt	6240
ttttctgctt	ctttttcttt	ctgttcctgg	taatcagaaa	aatttagttt	ttctatatcg	6300
ttaggtacag	cttccagtaa	atgaacaatg	aattttttga	tattcgtaat	aaagtctctt	6360



tgattgcctt	ctctttttacc	gattttttttt	aaatacgttt	cccatttagc	cgtcattttca	6420
gcactcgtta	aaaggtgctg	actttcaact	gcctggcaca	ataatttttc	tttttcagtt	6480
acaacaagct	ctgatttcac	tttttgcatt	ctacaaactg	cataactcat	atgtaaatcg	6540
ctccttttta	ggtggcacaa	atgtgaggca	ttttcgtct	ttccggcgag	gctagttacc	6600
cttaagttaa	tggatatgact	ggttttaagc	gcaaaaaaag	ttgctttttc	gtacctatta	6660
atgtatcggt	agaaaaccga	ctgtaaaaag	tacagtcggc	attatctcat	attataaaag	6720
ccagtcatta	ggcctatctg	acaattcctg	aatagagttc	ataaacaatc	ctgcatgata	6780
accatcacaa	acagaatgat	gtacctgtaa	agatagcggg	aaatatattg	aattaccttt	6840
attaatgaat	tttcctgctg	taataatggg	tagaaggtaa	ttactattat	tattgatatt	6900
taagttaa	ccagtaa	aagtccatgg	aataatagaa	agagaaaaag	catttttcagg	6960
tataggtggt	ttgggaaaca	atttccccga	accattatat	ttctctacat	cagaaaggta	7020
taaatcataa	aactctttga	agtcattctt	tacaggagtc	caaataccag	agaatgtttt	7080
agatacacca	tcaaaaattg	tataaagtgg	ctctaactta	tcccaataac	ctaactctcc	7140
gtcgctattg	taaccagttc	taaaagctgt	atttgagttt	atcacccttg	tcactaagaa	7200
aataaatgca	gggtaaaatt	tatatccttc	ttgttttatg	tttcgggtata	aaacactaat	7260
atcaattttct	gtgggtatac	taaaagtcgt	ttggtggttc	aaataatgat	taaatatctc	7320
ttttctcttc	caattgtcta	aatcaatttt	attaaagttc	atttgatatg	cctcctaaat	7380
ttttatctaa	agtgaattta	ggaggcttac	ttgtctgctt	tcttcattag	aatcaatcct	7440
tttttaaaag	tcaatattat	tgtaacataa	atatatatatt	taaaaatatc	ccactttatc	7500
caatttttcgt	ttgttgaact	aatgggtgct	ttagttgaag	aataaaaagac	cacattaaaa	7560
aatgtgggtct	tttgtgtttt	tttaaaggat	ttgagcgtag	cgaaaaatcc	ttttctttct	7620
tatcttgata	ataagggtaa	ctattgccgg	gatagactgt	aacattctca	cgcataaaat	7680
cccctttcat	tttcta	aaatctatta	ccttattatt	aattcaattc	gctcataatt	7740
aatccttttt	cttattacgc	aaaatggccc	gatttaagca	caccctttat	tccgttaatg	7800
cgccatgaca	gccatgataa	ttactaatac	taggagaagt	taataaatac	gtaaccaaca	7860
tgattaacaa	ttattagagg	tcatcgttca	aaatgggatg	cgttttgaca	catccactat	7920
atatccgtgt	cgttctgtcc	actcctgaat	cccattccag	aaattctcta	gcgattccag	7980
aagttttctca	gagtcggaaa	gttgaccaga	cattacgaac	tggcacagat	ggtcataacc	8040
tgaaggaaga	tctgattgct	taactgcttc	agttaagacc	gaagcgtctg	tcgtataaca	8100
gatgcgatga	tgcagaccaa	tcaacatggc	acctgccatt	gctacctgta	cagtcaagga	8160
tggtagaaat	gttgtcggtc	cttgcacacg	aatattacgc	catttgccctg	catattcaaa	8220
cagctcttct	acgataaggg	cacaaatcgc	atcgtggaac	gtttgggctt	ctaccgattt	8280
agcagtttga	tacactttct	ctaagtatcc	acctgaatca	taaatcggca	aaatagagaa	8340
aaattgacca	tgtgtaagcg	gccaatctga	ttccacctga	gatgcataat	ctagtagaat	8400
ctcttcgcta	tcaaaattca	cttccacctt	ccactcaccg	gttgctccatt	catggctgaa	8460
ctctgcttcc	tctgttgaca	tgacacacat	catctcaata	tccgaatagg	gcccatcagt	8520
ctgacgacca	agagagccat	aaacaccaat	agccttaaca	tcatccccat	atttatccaa	8580
tattcgttcc	ttaatttcat	gaacaatctt	cattctttct	tctctagtca	ttattattgg	8640
tccattcact	attctcattc	ccttttcaga	taattttaga	tttgcttttc	taaataagaa	8700
tatttgagaga	gcaccgttct	tattcagcta	ttaataactc	gtcttcctaa	gcac	8760
atccttttaa	taacaattat	agcatcta	cttcaacaaa	ctggcccgtt	tggtgaacta	8820
ctcttttaata	aaataatttt	tccgttccca	attccacatt	gcaataatag	aaaatccatc	8880
ttcatcggct	ttttcgtcat	catctgtatg	aatcaaatcg	ccttcttctg	tgtcatcaag	8940
gtttaatttt	ttatgtattt	cttttaacaa	accaccatag	gagattaacc	ttttacgggtg	9000
taaaccttcc	tccaaatcag	acaaacgttt	caaattcttt	tcttcatcat	cggtcataaa	9060
atccgtatcc	tttacaggat	attttgcagt	ttcgtcaatt	gccgattgta	tatccgattt	9120
atatttat	ttcggtcgat	tttttattaa	aacgtctcaa	aatcgtttct	gagacgtttt	9180
agcgtttatt	tcgttttagtt	atcggcataa	tcgttaaaac	aggcgttatc	gtagcgtaaa	9240
agcccttgag	cgtagcgtgg	ctttgcagcg	aagatgttgt	ctgttagatt	atgaaagccg	9300
atgactgaat	gaaataataa	gcgcagcgtc	cttctatttc	ggttggagga	ggctcaaggg	9360
agtttgaggg	aatgaaattc	cctcatgggt	ttgattttaa	aaattgcttg	caattttgcc	9420
gagcggtagc	gctggaaaat	ttttgaaaaa	aatttggaat	ttggaaaaaa	atgggggggga	9480
aaggaagcga	attttgcttc	cgtactacga	ccccccatta	agtgccgagt	gccaa	9540
gtgccaaaaa	cgctctatcc	caactggctc	aagggtttga	ggggtttttc	aatcgccaac	9600
gaatcgccaa	cgtttttcgcc	aacgtttttt	ataaatctat	atttaagtag	ctttatttgtt	9660



taaagagcaa	ttctcctggt	tttctcaagg	cagtccaatt	caattacatt	taactactaa	1320
tgtaaaacaa	gctactttat	tggttggtcac	tttagcaata	atgcaaaaaa	cattaaatat	1380
aaataacatt	caaatagaata	ttaaataatt	acagcagtct	gagttataaa	atagatatct	1440
cggaccgctt	tggtcagttta	ttcttgacat	gtagttaggg	ggctgggtata	atcacatagt	1500
actgttctcg	agagttagtt	tggtttattaa	attaaccaac	tggatcccgg	gtctagatta	1560
gggttaacttt	gaaaggatat	tcctcatgca	agctaattct	caatgggttag	atgacccaga	1620
agtcttccgg	gtcaaccaat	tacctgcaca	tagtgatcac	cattattatc	acgacacagc	1680
agaattcaaa	acgggtagtc	gcttcatcaa	gagtctcaat	ggcgcttggc	gttttaactt	1740
cgccaagaca	ccggctgaac	gcccagttga	tttttatcaa	cccgatttcg	atgcaaccga	1800
ctttgatagc	attcaagttc	ccggtcatat	tgaactagcc	ggctatgggtc	aaattcaata	1860
cattaacacg	ctatacccat	gggaaggtaa	aatttaccgt	cgcccaccgt	ataccctcaa	1920
tcaagatcaa	ttaacaccag	gcctattcag	cgacgctgcg	gacaacaccg	tcggctcgta	1980
cctcaaaacc	ttcgatctcg	acgatgtttt	taaagggcaa	cgtattatca	ttcagttcca	2040
aggggtagaa	gaagccctgt	acgtctgggt	aatggccat	tttattgggt	actctgaaga	2100
tagtttcacc	ccttcagaat	ttgatttgac	gccgtatatt	caggaccaag	gtaacgtttt	2160
agcggttcgg	gtctacaaac	acagtactgc	tgcctttatt	gaagaccaag	atatgttccg	2220
tttctctggt	attttccgtg	acgtcaatat	actggcggag	cctgctagcc	atattactga	2280
tttggtacatc	cgaccagttc	caaatagcaa	tctcaaaagt	ggtgagctca	acatcactac	2340
taaagtaacc	ggcgaaccag	ccacttttagc	gctgaccgtt	aaagaccatg	acgggcgagt	2400
actgacgagt	caaacgcaaa	ccggtagtgg	cagtgttaacc	tttgatacta	tggtattcga	2460
ccaactgcac	ttgtgggtcac	cacaaacgcc	gtatctctat	caattgacaa	ttgaagttaa	2520
cgatgctgat	caccaactct	tggaagtcgt	cccatatcag	tttgggttcc	ggacggtcga	2580
gctgcgcgat	gacaaagtca	tttacgtcaa	caataaacgg	ttgggtgatca	acgggggttaa	2640
ccggcacgaa	tggaacgccc	acaccggtcg	cgttatcagt	atggctgata	tgcgcgctga	2700
tatccaaacc	atgttagcta	acaatatcaa	tgccgatcgg	acctgccatt	atcctgatca	2760
attaccttgg	tatcaattat	gtgacgaggg	cggtatctac	ctaattggccg	aaaccaacct	2820
cgaatcgcac	gggtcatggc	aaaagatggg	ggctatcgag	ccttcttaca	atgttcctgg	2880
cgataatcca	cactggccag	cagcgggtgat	cgaccgggcc	cgttcaaact	acgaatgggt	2940
taaaaaccac	ccatcaatca	ttttttgggtc	acttggcaat	gaatcgtatg	ctggcgaaga	3000
tatcgcgcg	atgcaggctt	tttataaaga	acacgatgat	tcacgactcg	tccactacga	3060
aggcgttttc	tacacaccag	aattaaaaga	tcgcatttct	gatgttgaaa	gtcggatgta	3120
cgaaaagccc	caaaatattg	tagcttactt	ggaagataac	ccaaccaaac	ctttcctaaa	3180
ttgtgaatat	atgcatgaca	tggggaattc	tctgggcgggt	atgcaatcat	ataatgattt	3240
gatcgacaag	tatccaatgt	atcaagggtg	ctttatttgg	gactttattg	atcaagcact	3300
cttcgttcat	gaccaatca	ccgaccaaga	cgtgctccgg	tatggcgggtg	atttcgacga	3360
acgccactcc	gattatgcat	tctccggtaa	cggcttaatg	tttgccgacc	ggacacccaa	3420
accagcaatg	caagagggtga	aatattatta	tggcttacac	aaataatcaa	ctacacgtta	3480
tttacggcga	cgggagctta	ggactacagg	gggctaattt	ccactacctc	tttagctacg	3540
aacgtggggg	acttgaatca	ctcgctcgta	acgataaaga	gtggctctat	cgtacaccca	3600
cgcccatggt	ttggcggggc	acaaccgata	atgatcacgg	tagcggcttt	tcagtcaaat	3660
ccgcacagtg	gtacgcgggc	gataagttct	caacttgtca	agatatcgaa	ttgacggttg	3720
acgaccaacc	agtcacaccg	ttaccaatcg	cgccactcaa	taacaaatac	acggatcacg	3780
aaatcgccac	gaaagtctct	ctggcttacc	acttcgttac	cacgaccgtt	cctagtacca	3840
tcgtcacagt	gacttatacg	gtgacagcag	acggtcagat	caatatcgcc	accattata	3900
gcggtcagtc	tgatttgcca	gagctacccg	catttggtct	gcggtttatc	atgccaacta	3960
ccgcgaccgg	cttcgactat	accggtttgt	ccggtgagac	ttatcctgac	cggctggctg	4020
gcgcaacaca	cgggcaattc	cacgttgaca	gtctgccagt	cacaccatac	ttggtcccac	4080
aagaatgcgg	catgcacatg	caaactgaac	aagtgcacgt	aacgcgatca	acaacacaaa	4140
ataacgctga	ccacgacaac	acaccattca	gtttaacatt	tagccaaacc	gatgcacat	4200
tcgccttcag	ctgccttccc	tataccgctg	ctgaactaga	aaacgcaaca	cacatggaag	4260
aattaccatt	agcacggcga	acggctttat	caatctacgg	tgccgttcgt	ggggtcgggtg	4320
gcattgacag	ttgggggaacg	gacgtagaag	ccccatatca	tatcctcgct	aatcaagaca	4380
ttgacttcag	ctttaacatt	cattttctaaa	aattaatttg	atttcaaaaag	aatcgctccg	4440
gcagttattt	gccagagcgt	tcttttaata	tgtttttatgg	ctgagcttta	gtccttttgaa	4500
gtggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	4560



ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	4620
ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	4680
ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	4740
ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	4800
ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	4860
ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	4920
ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	4980
ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	5040
ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	5100
ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	5160
ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	5220
ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	5280
ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	ggggggggggg	5340
ggggggggggg	gggggtcgacc	gatgcccttg	agagccttca	accagtcag	ctccttccgg	5400
tgggcgcggg	gcatgactat	cgtcgccgca	cttatgactg	tcttctttat	catgcaactc	5460
gtaggacagg	tgccggcagc	gctctgggtc	attttcggcg	aggaccgctt	tcgctggagc	5520
gcgacgatga	tcggcctgtc	gcttgcggtg	ttcggaatct	tgcacgccct	cgctcaagcc	5580
ttcgtcactg	gtcccgccac	caaacgtttc	ggcgagaagc	aggccattat	cgccggcatg	5640
gcggccgacg	cgctgggcta	cgtcttgctg	gcgttcgcga	cgcgaggctg	gatggccttc	5700
cccattatga	ttctttctcgc	ttccggcggc	atcgggatgc	ccgcgttgca	ggccatgctg	5760
tccaggcagg	tagatgacga	ccatcaggga	cagcttcaag	gatcgctcgc	ggctcttacc	5820
agcctaactt	cgatcactgg	accgctgatc	gtcacggcga	tttatgccgc	ctcggcgagc	5880
acatggaacg	ggttggcatg	gattgtaggc	gccgccctat	accttgtctg	cctccccgcg	5940
ttgcgtcgcg	gtgcatggag	ccgggccacc	tcgacctgaa	tggaagccgg	cggcacctcg	6000
ctaacggatt	caccactcca	agaattggag	ccaatcaatt	cttgcggaga	actgtgaatg	6060
cgcaaaccaa	cccttggcag	aacatatcca	tcgcgtccgc	catctccagc	agccgcacgc	6120
ggcgcatctc	gggcagcgtt	gggtcctggc	cacgggtgcg	catgatcgtg	ctcctgtcgt	6180
tgaggaccog	gctaggctgg	cggggttgcc	ttactggtta	gcagaatgaa	tcaccgatac	6240
gcgagcgaac	gtgaagcgac	tgctgctgca	aaacgtctgc	gacctgagca	acaacatgaa	6300
tgggtcttcgg	tttccgtggt	tcgtaaagtc	tggaaacgcg	gaagtccct	acgtgctgct	6360
gaagttgccc	gcaacagaga	gtggaaccaa	ccggtgatac	cacgatacta	tgactgagag	6420
tcaacgccat	gagcggcctc	atttcttatt	ctgagttaca	acagtccgca	ccgctgtccg	6480
gtagctcctt	ccggtgggcg	cggggcatga	ctatcgtcgc	cgcacttatg	actgtcttct	6540
ttatcatgca	actcgtagga	caggtgccgg	cagcgcccaa	cagtcccccg	gccacggggc	6600
ctgccaccat	accacgccg	aaacaagcgc	cctgcaccat	tatgttccgg	atctgcatcg	6660
caggatgctg	ctggctaccc	tgtggaacac	ctacatctgt	attaacgaag	cgctaaccgt	6720
ttttatcagg	ctctgggagg	cagaataaat	gatcatatcg	tcaattatta	cctccacggg	6780
gagagcctga	gcaaactggc	ctcaggcatt	tgagaagcac	acggtcacac	tgcttccggg	6840
agtcaataaa	ccggtaaacc	agcaatagac	ataagcggct	atttaacgac	cctgccctga	6900
accgacgacc	gggtcgaatt	tgcttttcgaa	tttctgccat	tcatccgctt	attatcactt	6960
attcaggcgt	agcaccaggc	gtttaagggc	accaataact	gccttaaaaa	aattacgccc	7020
cgccctgcc	ctcatcgcag	tactgttgta	attcattaag	cattctgccg	acatggaagc	7080
catcacagac	ggcatgatga	acctgaatcg	ccagcggcat	cagcaccttg	tcgccttgcg	7140
tataatat	gcccattggtg	aaaacggggg	cgaagaagtt	gtccatattg	gccacgttta	7200
aatcaaaact	ggtgaaactc	accaggggat	tggctgagac	gaaaaacata	ttctcaataa	7260
accctttagg	gaaataggcc	aggttttcac	cgtaacacgc	cacatcttgc	gaatatatgt	7320
gtagaaactg	ccggaaatcg	tcgtggtatt	cactccagag	cgatgaaaac	gtttcagttt	7380
gctcatggaa	aacggtgtaa	caagggtgaa	cactatccca	tatcaccagc	tcaccgtctt	7440
tcattgccat	acgaattcag	aggtttgatg	actttgacct	ttggtttttaa	atttttgaaa	7500
aaaataaaaa	aaggcgaagc	ctattatata	tttatcatat	atattttaat	cttttgttct	7560
tttgcgtgaa	aaaaaaggca	gtgttttctgc	tagttataga	aattaaacag	tcacaaaaat	7620
cgatgtatac	agtcacaaaa	atcgatTTTT	gtgactctat	gcatcgatgt	atacgagtca	7680
caaaaatcga	tgtacacagt	acgactTTTT	tatttgtgta	ctgtatatag	tataataaaa	7740
gcatagagaa	aactcactat	gaaatgactt	tctctatgct	actactaaaa	cacgcaaagg	7800
aqcqtatttta	tactatgatt	ataccagaaa	aacaaaacaa	acaaaagcag	gtgctgacct	7860







<213> Artificial Sequence

<220>

<223> Lac operator sequence

<400> 11

ttgttatccg ctcacaa

17

<210> 12

<211> 94

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide Xyl/Lac-T5

<400> 12

gaccgtcata aaaaatttat ttgctttgtg agcggataac aattataata gattcaagtt 60

agtttggttta ttaaattaac caactaaaat gtag 94

<210> 13

<211> 95

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide Xyl/Lac-T5 complement

<400> 13

aattctacat tttagttggt taatttaata aacaaactaa cttgaatcta ttataattgt 60

tatccgctca caaagcaaat aaatttttta tgacg 95

<210> 14

<211> 57

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide Xyl/Lac-P59

<400> 14

gaccgacatt aaattcttga cattgtgagc ggataacaat agaataataat agttgtc 57

<210> 15

<211> 58

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide Xyl/Lac P59 complement

<400> 15

tcgagacaac tatttatattc tattggtatc cgctcacaat gtcaagaatt taatgtcg 58

<210> 16

<211> 6852  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Vector pXyl-T5 p15a

<400> 16

tggcattcta	cgactataac	ttaaatttat	atTTTTtact	ttataatata	taattgatta	60
tagaataatg	ttgctcatat	cgtttgccaa	catctagtag	tcaaattaca	ctatggttaca	120
cttggttaata	ttaaccgaac	ttccccctgtc	caaattagat	aagaggtaat	aataaatgga	180
aaataattttt	atagtaaagt	aaaatgagaa	gcgtgtatta	aaacaaattt	tcaataacag	240
caatattttca	cgaacacaaa	tatcgaagaa	tttagaactt	aataaagcta	ctattttctaa	300
cattctgaac	aacttaaaac	acaagagttt	agttaatgaa	gtaggagaag	gtaatagtag	360
taaaagtggg	ggacgaaagc	ctatttttact	cgaaattaac	caaaaatatg	gctactatat	420
ttctatggat	ttaacatatg	attccgttga	attaatgtac	aactactttg	atgctactat	480
attaaagcaa	gattcctacg	aattaaatga	taaaaatgta	agcagtatat	tacaaatttt	540
aaaatctaata	ataaacgtct	cagaaaaata	tgatacgtta	tatgggttac	ttggtatata	600
tatatccata	cacgggtatcg	ttgacgatga	gcaaaacata	atcaatcttc	cttttcataa	660
aatgagaaa	cgcacattta	ccgatgaatt	aaagtcattc	acaaatgttc	ctgtcgttat	720
agaaaatgaa	gcaaatttat	cagcgctata	tgaaaaaagt	ttatatatta	attcaaacat	780
aaataatttg	attactttta	gtattcacaa	gggtataggc	gctggcatca	taataaataa	840
aaaacttttat	cgtgggtcaa	atggagaggc	tggagagata	ggtaagacat	tggtttttga	900
atctataaat	aacaatgaca	acaaatatta	taaaatcgaa	gatatatgct	cccaagacgc	960
tttaatacag	aaaataaata	atagggttggg	cgtcacattg	acgttttacag	aactaatcca	1020
atattacaac	gaaggaaatt	caattggtgc	tcatgaaatt	aaacaattta	ttaataaaat	1080
gacagttctg	attcataatt	tgaatacaca	atttaaccca	gacgctatct	atattaactg	1140
tcctttaatt	aatgaattac	caaataattt	aaatgaaatt	aaagagcaat	tctcctgttt	1200
ttctcaaggc	agtccaattc	aattacattt	aactactaat	gtaaaacaag	ctactttatt	1260
gggtggcact	ttagcaataa	tgcaaaaaac	attaaatata	aataacattc	aaatgaatat	1320
taaataatta	cagcagtctg	agttataaaa	tagatatctc	ggaccgtcat	aaaaaattta	1380
tttgctttca	ggaaaatttt	tctgtataat	agattcaagt	tagtttggtt	attaaattaa	1440
ccaactaaaa	tgtagaattc	gagctcggta	cccggggagc	ctctagagtc	gacctgcagc	1500
caagcttggg	cttttcagcc	tgatacagat	taaatcagaa	cgcagaagcg	gtctgataaa	1560
acagaatttg	cctggcggca	gtagcgcggg	ggccccacct	gaccccatgc	cgaactcaga	1620
agtgaaacgc	cgtagcgccg	atggtagtgt	ggggtctccc	catgagagag	tagggaactg	1680
ccaggcatca	aataaaacga	aaggctcagt	cgaaagactg	ggcctttcgt	tttatctgtt	1740
gtttgtcggg	gaacgctctc	ctgagtagga	caaataccgc	gggagcggat	ttgaacgttg	1800
cgaagcaacg	gcccggaggg	tggcggggcag	gacgcccgc	ataaactgcc	aggcatcaaa	1860
ttaagcagaa	ggccatcctg	acggatggcc	tttttgcggt	tctacaaact	ctttttgttt	1920
atTTTTtcta	atacattcaa	atatgtatcc	gctgatcccc	atcctatcga	tgataagctg	1980
tcaaacatga	gaattaaatc	aatctaaagt	atatatgagt	aaacttggtc	tgacagttac	2040
caatgcttaa	tcagtgaggc	acctatctca	gcgatctgtc	tatttcggtc	atccatagtt	2100
gcctgactcc	ccgtcgtgta	gataactacg	atacggggag	gcttaccatc	tggccccagt	2160
gctgcaatga	taccgcgaga	cccacgctca	ccggctccag	atttatcagc	aataaaccag	2220
ccagccggaa	gggccgagcg	cagaagtggg	cctgcaactt	tatccgcctc	catccagtct	2280
attaattggt	gccgggaagc	tagagtaagt	agttcgccag	ttaatagttt	gcgcaacgtt	2340
gttgccattg	ctacaggcat	cgtggtgtca	cgctcgtcgt	ttggtatggc	ttcattcagc	2400
tccggttccc	aacgatcaag	gcgagttaca	tgatccccca	tgttgtgcaa	aaaagcggtt	2460
agctccttcg	gtcctccgat	cgttggtcaga	agtaagttag	ccgcagtgtt	atcactcatg	2520
gttatggcag	cactgcataa	ttctcttact	gtcatgccat	ccgtaagatg	cttttctgtg	2580
actggtgagt	actcaaccaa	gtcattctga	gaatagtgtg	tgcggcgacc	gagttgctct	2640
tgcccggcgt	caacacggga	taataccgcg	ccacatagca	gaactttaaa	agtgtctatc	2700
attggaaaac	gctcttcggg	gcgaaaactc	tcaaggatct	taccgctgtt	gagatccagt	2760
tcgatgtaac	ccactcgtgc	acccaactga	tcttcagcat	cttttacttt	caccagcgtt	2820





tacatataat	aaaaaaagag	atgattataa	tcctcatttt	catgtgttaa	ttgcagtaaa	6180
taaatcgtat	ttcacagata	aaagatatta	tattagccaa	caagaatggg	tagattttatg	6240
gcgtgatgta	acgggcattt	cagaaataac	acaagttcaa	gttcaaaaaa	taagacaaaa	6300
taataataaa	gaattatatg	aaatggctaa	gtattctggg	aaagatagtg	attattttaat	6360
aaataaatca	aaaagtcttt	gatgcatttt	ataaatcact	taaaggtaaa	caggtatttag	6420
tttatttcagg	attattttaa	gaggctaaaa	agaaattaaa	aaatggggat	ttagattact	6480
taaaagaaat	tgatccaacc	gtaatatatc	tatcaaattt	tttatatttg	gaaacaaaaa	6540
gagtatttag	ctagtgaact	ttatgactta	acagaacaag	aaaaaagaga	aattaatcac	6600
aaaatgatag	acgaaatcga	ggaagaacaa	taacaaaata	taagtgcata	cagtcgtctg	6660
caagttagt	taagggttct	tctcaacgca	caataaattt	tctcggcata	aatgcgtggg	6720
ctaattttta	tttttaataa	ccttgatagc	aaaaaatgcc	attccaatac	aaaaccacat	6780
acctataatc	gataaccaca	taacagtcac	aaaaccactc	ctttttaaca	aacttttatca	6840
caagaaatat	tt					6852

<210> 17

<211> 9437

<212> DNA

<213> Artificial Sequence

<220>

<223> Vector pEPEF3

<400> 17

caacccagtc	agctccttcc	gggtgggcgcg	gggcatgact	atcgtcgccg	cacttatgac	60
tgtcttcttt	atcatgcaac	tcgtaggaca	gggtgccggca	gcgctctggg	tcatttttcgg	120
cgaggaccgc	tttcgctgga	gcgcgacgat	gatcggcctg	tcgcttgccg	tattcgggaat	180
cttgacgcgc	ctcgctcaag	ccttcgtcac	tggtcccgcg	accaaacggt	tcggcgagaa	240
gcaggccatt	atcgccggca	tggcggccga	cgcgctgggc	tacgtcttgc	tggcgttcgc	300
gacgcgaggc	tggatggcct	tccccattat	gattcttctc	gcttcgggcg	gcacggggat	360
gcccgcgttg	caggccatgc	tgtccaggca	ggtagatgac	gaccatcagg	gacagcttca	420
aggatcgctc	gcggctctta	ccagcctaac	ttcgatcact	ggaccgctga	tcgtcacggc	480
gatttatgcc	gcctcggcga	gcacatggaa	cgggttgcca	tggattgtag	gcgccgccct	540
ataccttgtc	tgcttccccg	cgttgcgctc	cgggtgcatg	agccggggcca	cctcgacctg	600
aatggaagcc	ggcggcacct	cgctaacgga	ttcaccactc	caagaattgg	agccaatcaa	660
ttcttgcgga	gaactgtgaa	tgcgcaaacc	aacccttggc	agaacataat	catcgcgctc	720
gccatctcca	gcagccgcac	gcggcgcatc	tcgggcagcg	ttgggtcctg	gccacgggtg	780
cgcatgatcg	tgctcctgtc	gttgaggacc	cggctaggct	ggcgggggtg	ccttactggg	840
tagcagaatg	aatcacccgat	acgcgagcga	acgtgaagcg	actgctgctg	caaaacgtct	900
gcgacctgag	caacaacatg	aatggtcttc	ggtttccgtg	tttcgtaaag	tctggaaacg	960
cggaagtccc	ctacgtgctg	ctgaagtgtg	ccgcaacaga	gagtggaaac	aaccggtgat	1020
accacgatac	tatgactgag	agtcaacgcc	atgagcggcc	tcattttctta	ttctgagtta	1080
caacagtccg	caccgctgtc	cggtagctcc	ttccgggtgg	cgccggggcat	gactatcgtc	1140
gccgcactta	tgactgtctt	ctttatcatg	caactcgtag	gacagggtgc	ggcagcgccc	1200
aacagtcccc	cggccacggg	gcctgccacc	ataccacgcg	cgaaacaagc	gccctgcacc	1260
attatgttcc	ggatctgcat	cgcaggatgc	tgctggctac	cctgtggaac	acctacatct	1320
gtattaacga	agcgctaacc	gtttttatca	ggctctggga	ggcagaataa	atgatcatat	1380
cgtcaattat	tacctccacg	gggagagcct	gagcaaactg	gcctcaggca	tttgagaagc	1440
acacggtcac	actgcttccg	gtagtcaata	aaccggtaaa	ccagcaatag	acataagcgg	1500
ctattttaacg	accctgccct	gaaccgacga	ccgggtcgaa	tttgctttcg	aattttctgcc	1560
attcatccgc	ttattatcac	ttattcaggc	gtagcaccag	gcgtttaagg	gcaccaataa	1620
ctgccttaaa	aaaattacgc	cccgccttgc	cactcatcgc	agtactgttg	taattcatta	1680
agcattctgc	cgacatggaa	gccatcacag	acggcatgat	gaacctgaat	cgccagcggc	1740
atcagcacct	tgctgccttg	cgtataatat	ttgcccattg	tgaaaacggg	ggcgaagaag	1800





ctcctccaag	ccagttacct	cggttcaaag	agttggtagc	tcagagaacc	ttcgaaaaac	5160
cgccctgcaa	ggcgggtttt	tcgttttcag	agcaagagat	tacgcgcaga	ccaaaacgat	5220
ctcaagaaga	tcattcttatt	aatcagataa	aatattttcta	gatttcagtg	caatttatct	5280
cttcaaagt	agcacctgaa	gtcagcccca	tacgatataa	gttgtaattc	tcattgtttga	5340
cagcttatca	tcgatacaaa	ttccccgtag	gcgctaggga	cctcttttagc	ttcttggaag	5400
ctgtcagtag	tatatctaata	aattttatctc	cattcccttt	agtaacgtgt	aactttccaa	5460
atttaaaaaa	gcgactcata	gaattatttc	ctcccgttaa	ataatagata	actattaaaa	5520
atagacaata	cttgctcata	agtaaatggta	cttaaattgt	ttactttggc	gtgtttcatt	5580
gcttgatgaa	actgattttt	agtaaacagt	tgacgatatt	ctcgattgac	ccattttgaa	5640
acaaagtacg	tatatagctt	ccaatattta	tctggaacat	ctgtgggatg	gcgggtaagt	5700
tttattaaga	cactgtttac	ttttggttta	ggatgaaagc	attccgctgg	cagcttaagc	5760
aattgctgaa	tcgagacttg	agtgtgcaag	agcaacccta	gtgttcggtg	aatatccaag	5820
gtacgcttgt	agaatccttc	ttcaacaatc	agatagatgt	cagacgcacg	gctttcaaaa	5880
accacttttt	taataatttg	tgtgcttaaa	tggttaaggaa	tattcccaac	aattttatac	5940
ctctgtttgt	tagggaattg	aaactgtaga	atatcttggt	gaattaaagt	gacacgagta	6000
ttcagtttta	atttttctga	cgataagttg	aatagatgac	tgtctaattc	aatagacggt	6060
acctgtttac	ttatttttagc	cagtttcgtc	gttaaattgcc	ctttacctgt	tccaatttcg	6120
taaacggtat	cggtttcttt	taaattcaat	tgttttatta	tttggttgag	tactttttca	6180
ctcgttaaaa	agttttgaga	atattttata	tttttgttca	tgtaattctct	cctgaagtga	6240
ttacatctat	aaacaaatac	agaagttaaa	cgatttggtt	gtaatttttag	ttatctgttt	6300
aaaaagtcac	aagattagtc	actggttaga	attaatctaa	cgtattttatt	tatctgcgta	6360
atcactgttt	ttagtctgtt	tcaaaacagt	agatgtttta	tctacattac	gcatttgga	6420
taccaacatg	acgaatccct	ccttcttaat	tacaaatttt	tagcatctaa	tttaacttca	6480
attcctatta	tacaaaattt	taagataatg	cactatcaac	acactcttaa	gtttgcttct	6540
aagtcttatt	tccataactt	ctttttacgtt	tccgccattc	tttgctgttt	cgatttttat	6600
gatattggtg	aagtcagcac	gaacacgaac	cgtcttatct	cccattatat	ctttttttgc	6660
actgattggt	gtatcatttc	gtttttcttt	ttgtgcgctt	aaatttccca	caatcactca	6720
cttcttttcta	tttcttctta	ttcttatttt	atcatcaaca	atcaciaaatc	acttgtgatt	6780
tgtgataagt	gatttgatgat	aagtgatttg	tgattaatat	ataaaagccc	tcttttaaagg	6840
gctttttatgt	ttattttgag	aaagatatata	aatcaatata	tcccttttcc	ccaattttta	6900
caacggcatt	gtagggtctt	ttctctttgt	ttttgatttc	cttttaccag	ggtttctttt	6960
ccctccagta	attctttttac	attcgttttg	gttagttttt	tctttctaaa	atgttcagct	7020
aaagtaaact	tacattcagg	ataatttgaa	caaccataaa	acgatttttt	taatacaata	7080
ttgttgccac	acttaggaca	ttttcctaca	atactttttt	ctgcttcttt	ttctttctgt	7140
tcctggtaat	cagaaaaatt	tagtttttct	atatcgtttag	gtacagcttc	cagtaaatga	7200
acaatgaatt	ttttgatatt	cgtaataaag	ttctcttgat	tgcttctct	tttaccgatt	7260
ttttttaaat	acgtttccca	tttagccgtc	atttcagcac	tcgttaaaaag	gtgctgactt	7320
tcaactgcct	ggcacaataa	ttttcctttt	tcagttacaa	caagcttgcc	tgaggtcga	7380
cgataaccac	ataacagtca	taaaaccact	ccttttttaac	aaactttatc	acaagaaata	7440
ttttggcatt	ctacgactat	aacttaaat	tatatttttt	actttataat	atataattga	7500
ttatagaata	atgttgctca	tatcgtttgc	caacatctag	tactcaaatt	acactatggt	7560
acacttggtg	atattaaccg	aacttcccct	gtccaaatta	gataagaggt	aataataaat	7620
ggaaaataat	tttatagtaa	atgaaaatga	gaagcgtgta	ttaaaacaaa	ttttcaataa	7680
cagcaatatt	tcacgaacac	aaatatcgaa	gaatttagaa	cttaataaag	ctactatttc	7740
taacattctg	aacaacttaa	aacacaagag	tttagttaat	gaagtaggag	aaggtaatag	7800
tactaaaagt	ggtggacgaa	agcctatttt	actcgaaatt	aaccaaaaat	atggctacta	7860
tattttctatg	gatttaacat	atgattccgt	tgaattaatg	tacaactact	ttgatgctac	7920
tatatataag	caagattcct	acgaattaaa	tgataaaaaat	gtaagcagta	tattacaaat	7980
tttaaaatct	aatataaacg	tctcagaaaa	atatgatagc	ttatatgggt	tacttggtat	8040
atctatatcc	atacacggta	tcgttgacga	tgagcaaaac	ataatcaatc	ttccttttca	8100
taaaaatgag	aaacgcacat	ttaccgatga	attaaagtca	ttcaciaaatg	ttcctgtcgt	8160
tatagaaaat	gaagcaaatt	tatcagcgct	atatgaaaaa	agtttatata	tttaattcaaa	8220
cataaataat	ttgattactt	taagtattca	caaggggtata	ggcgctggca	tcataataaa	8280
taaaaaactt	tatcgtggct	caaatggaga	ggctggagag	ataggtaaga	cattgggtttt	8340
ggaatctata	aataacaatg	acaacaaata	ttataaaatc	gaagatatat	gctcccaaga	8400





<210> 21  
<211> 65  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Oligonucleotide P59\* complement

<400> 21  
tcgagacaac tattatatta tatcaaacct atctctccct gtcaagaata aactgtcatt 60  
tttcg 65

<210> 22  
<211> 94  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Oligonucleotide Xyl-T5-DD

<400> 22  
gaccgtcata aaaaatttat ttacatcag gaaaattttt ctgtatatta gattcaagtt 60  
agtttgttta ttaaattaac caactaaaat gtag 94

<210> 23  
<211> 95  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Oligonucleotide Xyl-T5-DD complement

<400> 23  
aattctacat tttagttggt taatttaata aacaaactaa cttgaatcta atatacagaa 60  
aaattttcct gatgtaaaat aaatttttta tgacg 95

<210> 24  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> pXyl-T5F primer

<400> 24  
cagcagtctg agttataaaa tag 23

<210> 25  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> LexL primer

<400> 25  
tgttttatca gaccgctt

18

<210> 26  
<211> 80  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Xyl-T5 fusion sequence

<400> 26  
tcataaaaaa tttatttgct ttcaggaaaa tttttctgta taatagattc aagttagttt 60  
gtttattaaa ttaaccaact 80

<210> 27  
<211> 80  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Xyl-T5-DD fusion sequence

<400> 27  
tcataaaaaa tttattttac atcaggaaaa tttttctgta tattagattc aagttagttt 60  
gtttattaaa ttaaccaact 80

<210> 28  
<211> 95  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> CP25 fusion sequence

<400> 28  
ctttggcagt ttattcttga catgttagtg agggggctgg tataatcaca tagtactggt 60  
ctcgagagtt agtttggtta ttaaattaac caact 95

<210> 29  
<211> 86  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> P32 fusion sequence

<400> 29  
gtgagcttgg actagaaaaa aacttcacaa aatgctatac taggtaggta actcgagagt 60  
tagtttgttt attaaattaa ccaact 86

<210> 30  
<211> 86  
<212> DNA

<213> Artificial Sequence

<220>

<223> P59 fusion sequence

<400> 30

acattaaatt cttgacaggg agagataggt ttgatagaat ataatagttg tctcgagagt 60  
tagtttgttt attaaattaa ccaact 86

<210> 31

<211> 93

<212> DNA

<213> Artificial Sequence

<220>

<223> P59\* fusion sequence

<400> 31

aaaaatgaca gtttattctt gacagggaga gataggtttg atataatata atagttgtct 60  
cgagagtttag tttgtttatt aaattaacca act 93

<210> 32

<211> 150

<212> DNA

<213> Artificial Sequence

<220>

<223> P1P2 fusion sequence

<400> 32

gtctagttat tcttgacaaa aaataatatt ttgatataat taaatagttg tcgtttgata 60  
acacagttta ttcttgacaa aaaaatataa aagtgtataa tagaaaagta ctgttctcga 120  
gagttagttt gtttattaaa ttaaccaact 150

<210> 33

<211> 242

<212> DNA

<213> Artificial Sequence

<220>

<223> P1P2\* fusion sequence

<400> 33

aaacagccga ataaggctgt ttttcttttt tttatgtttt agaataagtg gtctagttta 60  
ttcttgacaa aaaataatat tttgatataa ttaaatagtt gtcgtttgag acgactgact 120  
ttcttattat tcatctaaaa tattattttg aaaagataac acagttattc ttgacaaaaa 180  
aatataaaag tgtataatag aaaagtactc gagagttagt ttgtttatta aattaaccaa 240  
ct 242

<210> 34

<211> 88

<212> DNA

<213> Artificial Sequence

<220>



<223> PL fusion sequence

<400> 34

tttcgtgaac ttttttggtg acaaagataa aaacacatga tataacttaa tcactcgaga 60  
gttagtttgt ttattaaatt aaccaact 88

<210> 35

<211> 88

<212> DNA

<213> Artificial Sequence

<220>

<223> PL10 fusion sequence

<400> 35

tttcgtgaac ttttttggtg acaaagataa aaacacatga tataatttaa tcactcgaga 60  
gttagtttgt ttattaaatt aaccaact 88

<210> 36

<211> 51

<212> DNA

<213> Artificial Sequence

<220>

<223> Xyl-T5 promoter sequence

<400> 36

tcataaaaaa tttatttgct ttcaggaaaa tttttctgta taatagattc a 51

<210> 37

<211> 51

<212> DNA

<213> Artificial Sequence

<220>

<223> Xyl-T5-DD promoter sequence

<400> 37

tcataaaaaa tttattttac atcaggaaaa tttttctgta tattagattc a 51

<210> 38

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> CP25 promoter sequence

<400> 38

ctttggcagt ttattcttga catgttagtg agggggctgg tataatcaca tagtactggt 60

<210> 39

<211> 51

<212> DNA

<213> Artificial Sequence

<220>

<223> P32 promoter sequence

<400> 39

gtgagcttgg actagaaaaa aacttcacaa aatgctatac taggtaggta a 51

<210> 40

<211> 51

<212> DNA

<213> Artificial Sequence

<220>

<223> P59 promoter sequence

<400> 40

acattaaatt cttgacaggg agagataggt ttgatagaat ataatagttg t 51

<210> 41

<211> 58

<212> DNA

<213> Artificial Sequence

<220>

<223> P59\* promoter sequence

<400> 41

aaaaatgaca gtttattctt gacagggaga gataggtttg atataatata atagttgt 58

<210> 42

<211> 115

<212> DNA

<213> Artificial Sequence

<220>

<223> P1P2 promoter sequence

<400> 42

gtctagttat tcttgacaaa aaataatatt ttgatataat taaatagttg tcgtttgata 60  
acacagttta ttcttgacaa aaaaatataa aagtgtataa tagaaaagta ctggt 115

<210> 43

<211> 207

<212> DNA

<213> Artificial Sequence

<220>

<223> P1P2\* promoter sequence

<400> 43

aaacagccga ataaggctgt ttttcttttt tttatgtttt agaataagtg gtctagttta 60  
ttcttgacaa aaaataatat ttgatataa ttaaatagtt gtcgtttgag acgactgact 120  
ttcttattat tcattctaaa tattattttg aaaagataac acagttattc ttgacaaaaa 180  
aatataaaag tgtataatag aaaagta 207

<210> 44  
 <211> 43  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PL promoter sequence

<400> 44  
 ttttttgttg acaaagataa aaacacatga tataacttaaa tca 43

<210> 45  
 <211> 53  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> PL10 promoter sequence

<400> 45  
 tttcgtgaac ttttttgttg acaaagataa aaacacatga tataatttaa tca 53

<210> 46  
 <211> 9425  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Vector pEPEF9

<400> 46  
 acccagtcag ctcccttccgg tgggcgcggg gcatgactat cgtcgccgca cttatgactg 60  
 tcttctttat catgcaactc gtaggacagg tgccggcagc gctctgggtc attttcggcg 120  
 aggaccgctt tcgctggagc gcgacgatga tcggcctgtc gcttgccgta ttcggaatct 180  
 tgcacgccct cgctcaagcc ttcgtcactg gtcccgccac caaacgtttc ggcgagaagc 240  
 aggccattat cgccggcatg gcgggccgac cgctgggcta cgtcttgctg gcgttcgcga 300  
 cgcgaggctg gatggccttc cccattatga ttcttctcgc ttccggcggc atcgggatgc 360  
 ccgcgttgca ggccatgctg tccaggcagg tagatgacga ccatcaggga cagcttcaag 420  
 gatcgctcgc ggctcttacc agcctaactt cgatcactgg accgctgac gtcacggcga 480  
 tttatgccgc ctccggcgagc acatggaacg gggtggcatg gattgtaggc gccgccctat 540  
 accttgtctg cctcccccg cttgcgtcgc gtgcatggag ccggggccacc tcgacctgaa 600  
 tggaagccgg cggcacctcg ctaacggatt caccactcca agaattggag ccaatcaatt 660  
 cttgcggaga actgtgaatg cgcaaacc aa ccttggcag aacatatcca tcgcgtccgc 720  
 catctccagc agccgcacgc ggcgcacatc gggcagcgtt gggtcctggc cacgggtgcg 780  
 catgatcgtg ctccgtgctg tgaggaccgg gctaggctgg cgggggttgcc ttactgggta 840  
 gcagaatgaa tcaccgatac gcgagcgaac gtgaagcgcac tgctgctgca aaacgtctgc 900  
 gacctgagca acaacatgaa tgggtcttcgg tttccgtggt tcgtaaagtc tggaaacgcg 960  
 gaagtccctt acgtgctgct gaagttgccc gcaacagaga gtggaaccaa ccggtgatac 1020  
 cacgatacta tgactgagag tcaacgccat gagcggcctc atttcttatt ctgagttaca 1080  
 acagtccgca ccgctgtccg gtagctcctt ccggtggggc cggggcatga ctatcgctgc 1140  
 cgcacttatg actgtcttct ttatcatgca actcgtagga cagggtgccgg cagcgcccaa 1200  
 cagtcccccg gccacggggc ctgccaccat acccacgccc aaacaagcgc cctgcaccat 1260  
 tatgttccgg atctgcatcg caggatgctg ctggctaccc tgtggaacac ctacatctgt 1320  
 attaacgaag cgctaaccgt ttttatcagg ctctgggagg cagaataaat gatcatatcg 1380

tcaattatta	cctccacggg	gagagcctga	gcaaactggc	ctcaggcatt	tgagaagcac	1440
acggtcacac	tgcttccggt	agtcaataaa	ccggtaaacc	agcaatagac	ataagcggct	1500
atttaacgac	cctgccctga	accgacgacc	gggtcgaatt	tgcttttcgaa	tttctgccat	1560
tcatccgctt	attatcactt	attcaggcgt	agcaccaggc	gtttaagggc	accaataact	1620
gccttaaaaa	aattacgccc	cgccctgcca	ctcatcgcag	tactgttgta	attcattaag	1680
cattctgccc	acatggaagc	catcacagac	ggcatgatga	acctgaatcg	ccagcggcat	1740
cagcaccttg	tcgccttgcg	tataatat	gcccattggtg	aaaacggggg	cgaagaagtt	1800
gtccatattg	gccacgttta	aatcaaaaact	ggtgaaactc	acccagggat	tggttgagac	1860
gaaaaacata	ttctcaataa	acccttttagg	gaaataggcc	aggttttcac	cgtaacacgc	1920
cacatcttgc	gaatatatgt	gtagaaaactg	ccggaaatcg	tcgtgggtatt	cactccagag	1980
cgatgaaaac	gtttcagttt	gctcatggaa	aacggtgtaa	caagggtgaa	cactatccca	2040
tatcaccagc	tcaccgtctt	tcattgccat	acgaattcag	aggtttgatg	actttgacct	2100
ttgggttttaa	atttttgaaa	aaaataaaaa	aaggcgaagc	ctattatata	tttatcatat	2160
atatttttaat	cttttggttct	tttgcgtaga	aaaaaaggca	gtgttttcgc	tagttataga	2220
aattaaacag	tcacaaaaat	cgatgtatac	agtcacaaaa	atcgattttt	gtgactctat	2280
gcacgatgt	atacgagtca	caaaaatcga	tgtacacagt	acgacttttg	tatttggtga	2340
ctgtatatag	tataataaaa	gcatagagaa	aactcactat	gaaatgactt	tctctatgct	2400
actactaaaa	cacgcaaagg	agcgtattta	tactatgatt	ataccagaaa	aacaaaacaa	2460
acaaaagcag	gtgctgacct	tgaatgaatt	agaaaaacgc	aaagtagtgg	agcataacgc	2520
tttaattcaa	agtgtggcta	aaatgcaaaa	aacagcttta	aaaatgtttg	agttagccgt	2580
gtcttgtatt	gataccgaag	aacccccaaa	aaataatact	gtttatcttt	taaaatctga	2640
acttttttaa	ttttttgaag	tatcgtctag	cagtaagcat	agtcaattca	aagaagcagt	2700
taattatatg	caaaagcaag	cctttttcaa	tattaaagct	gataagaaac	taggtattga	2760
gtatgaaagc	attgtgccta	ttccttatgt	aaaatggaac	gattataacg	atgaagtaac	2820
aatacgtttt	gaccaagcca	ttatgcccta	tctgattgat	ttaaaggcag	aatttactca	2880
atataaaaatt	tccgaactac	aaaaactcaa	tagcaagtat	tcgattattt	tgtatcgttg	2940
gttatccatg	aattataacc	aatacgaaca	ttacagcgtg	aaagggggac	ggagagttga	3000
acaagtggaa	tcctaccgca	acccttcaat	aaaagtgaag	gaattgagag	aaataactga	3060
tacaataaat	gaacatcaac	attttcccca	ttttgaaact	agagtattaa	aaaaagcaat	3120
tgaagaaatc	aacgctcaca	cctcttttaa	tgtaacctat	gagaaaaaga	aagcagggcg	3180
gagcattgac	tctattgtct	ttcatattga	gaagaaacgc	atggcagacg	ataacagtta	3240
caagttggga	gataaagact	atcaagacga	taaaaagcaa	aatcaagaa	atgaagctga	3300
cttactaaaa	caggcaatgg	aaagtaaata	tacaagactt	ttatctgaaa	atttcttaat	3360
tggtcatgaat	gatattatgg	atacagccac	aatggtaggc	ttacagaaga	atgttttatcc	3420
gctttatgac	gaactgaaag	aattaagagg	gctaaatggt	gtcaaagacc	acttgtctta	3480
tggtgcccagc	aaaaaagaag	cctatttctaa	acgtaatgta	gcgaaatatc	ttaaaaaagc	3540
cattgaacaa	tatctgccaa	cgggttaaaag	gcaggactta	aaccatgagt	gaagacttaa	3600
aaacgataaa	agagttggcg	gacgagctag	gactagctaa	acagaccggt	caataccatt	3660
taaagttttt	gccgaccgaa	aatcgacaaa	aaaacaatag	tggttcgac	gtcctaaacc	3720
ttgaagaaca	aaagtattatc	aaaaaaagac	taacaaaaat	aaaaaaagtt	caaccgaccg	3780
aaaatcgaca	agaaaaaatg	aagaattaag	cgttaatagt	cttttggttag	gaattccgga	3840
tgagcattca	tcaggcgggc	aagaatgtga	ataaaggccg	gataaaactt	gtgcttattt	3900
ttcttttacgg	tcttttaaaaa	ggccgtaata	tccagctgaa	cggctctggtt	ataggtacat	3960
tgagcaactg	actgaaatgc	ctcaaaatgt	tctttacgat	gccattggga	tatatcaacg	4020
gtggtatatc	cagtgatttt	tttctccatt	ttagcttcct	tagctcctga	aaatctcgat	4080
aactcaaaaa	atacgcccgg	tagtgatctt	atttcattat	ggtgaaagtt	ggaacctctt	4140
acgtgccgat	caacgtctca	ttttcgccaa	aagttggccc	agggttccc	ggtatcaaca	4200
gggacaccag	gatttattta	ttctgcgaag	tgatcttccg	tcacaggat	ttattcggcg	4260
caaagtgcgt	cgggtgatgc	tgccaactta	ctgatttagt	gtatgatggt	gtttttgagg	4320
tgctccagtg	gcttctgttt	ctatcagctg	tccctcctgt	tcagctactg	acgggggtggt	4380
gcgtaacggc	aaaagcaccg	ccggacatca	gcgctagcgg	agtgtatact	ggcttactat	4440
gttggcactg	atgaggggtgt	cagtgaagtgt	cttcatgtgt	caggagaaaa	aaggctgcac	4500
cgggtgcgtca	gcagaatatg	tgatacagga	tatatccgc	ttcctcgctc	actgactcgc	4560
tacgctcggg	cgttcgactg	cggcgagcgg	aaatggctta	cgaacggggc	ggagatttcc	4620
tggaagatgc	caggaagata	cttaacaggg	aagtgagagg	gccgcggcaa	agccgttttt	4680



ccataggctc	cgccccctg	acaagcatca	cgaaatctga	cgctcaaadc	agtgggtggcg	4740
aaacccgaca	ggactataaa	gataccaggc	gtttccccct	ggcggtccc	tcgtgcgctc	4800
tcctgttcct	gcctttcggt	ttaccggtgt	cattccgctg	ttatggccgc	gtttgtctca	4860
ttccacgcct	gacactcagt	tccgggtagg	cagttcgctc	caagctggac	tgtatgcacg	4920
aaacccccgt	tcagtccgac	cgctgcgcct	tatccggtaa	ctatcgtctt	gagtccaacc	4980
cggaagaca	tgcaaaagca	ccactggcag	cagccactgg	taattgattt	agaggagtta	5040
gtcttgaagt	catgcgccgg	ttaaggctaa	actgaaagga	caagttttgg	tgactgcgct	5100
cctccaagcc	agttacctcg	gttcaaagag	ttggtagctc	agagaacctt	cgaaaaaccg	5160
ccctgcaagg	cggttttttc	gttttcagag	caagagatta	cgcgagacc	aaaacgatct	5220
caagaagatc	atcttattaa	tcagataaaa	tatttctaga	tttcagtgca	atttatctct	5280
tcaaagttag	cacctgaagt	cagccccata	cgatataagt	tgtaattctc	atgtttgaca	5340
gcttatcatc	gatacaaatt	ccccgtaggc	gctagggacc	tcttttagctt	cttggaagct	5400
gtcagtagta	tatctaataa	tttatctcca	ttcccttttag	taacgtgtaa	ctttccaaat	5460
ttaaaaaagc	gactcataga	attattttcct	cccgttaaat	aatagataac	tattaaaaat	5520
agacaatact	tgctcataag	taatggtagt	taaattgttt	actttggcgt	gtttcattgc	5580
ttgatgaaac	tgattttttag	taaacagttg	acgatattct	cgattgacct	attttgaaac	5640
aaagtacgta	tatagcttcc	aatattttatc	tggaacatct	gtggtagggc	gggtaagttt	5700
tattaagaca	ctgtttactt	ttggtttagg	atgaaagcat	tccgctggca	gcttaagcaa	5760
ttgctgaatc	gagacttgag	tgtgcaagag	caaccctagt	gttcggtgaa	tatccaaggt	5820
acgcttgtag	aatccttctt	caacaatcag	atagatgtca	gacgcacggc	tttcaaaaac	5880
cactttttta	ataatttgtg	tgcttaaagt	gtaaggaata	ttcccaacaa	ttttatacct	5940
ctgtttgtta	gggaattgaa	actgtagaat	atcttggtga	attaaagtga	cacgagtatt	6000
cagttttaat	ttttctgacg	ataagttgaa	tagatgactg	tctaattcaa	tagacgttac	6060
ctgtttactt	attttagcca	gtttcgctcg	taaatgccct	ttacctgttc	caatttcgta	6120
aacggtatcg	gtttctttta	aattcaattg	ttttattatt	tggttgagta	ctttttcact	6180
cgttaaaaag	ttttgagaat	attttatatt	tttgttcatg	taatctctcc	tgaagtgatt	6240
acatctataa	acaaatacag	aagttaaaccg	atgtgtttgt	aatttttagtt	atctgtttta	6300
aaagtcataa	gattagtcac	tggttaggaat	taatctaaccg	tattttattta	tctgcgtaat	6360
cactgttttt	agtctgtttc	aaaacagtag	atgtttttatc	tacattacgc	atttggaata	6420
ccaacatgac	gaatccctcc	ttcttaatta	caaatttttta	gcattctaatt	taacttcaat	6480
tcctattata	caaaattttta	agataatgca	ctatcaacac	actcttaagt	ttgcttctaa	6540
gtcttatttc	cataacttct	tttacgtttc	cgccattctt	tgctgtttcg	atttttatga	6600
tatgggtgcaa	gtcagcacga	acacgaaccg	tcttatctcc	cattatatct	ttttttgcac	6660
tgattgggtg	atcatttcgt	ttttcttttt	gtgcgcctaa	atttcccaca	atcactcact	6720
tctttctatt	tcttcttatt	cttattttat	catcaacaat	cacaaatcac	ttgtgatttg	6780
tgataagtga	tttgatgata	gtgatttgtg	attaatatat	aaaagccctc	tttaaagggc	6840
ttttatgttt	attttgagaa	agataataaaa	tcaatatatc	ccttttcccc	aatttttaca	6900
acggcattgt	agggtttttt	ctctttgttt	ttgatttcct	tttaccaggg	tttcttttcc	6960
ctccagtaat	tctttttacat	tcgtttttgg	tagttttttc	tttctaaaat	gttcagctaa	7020
agtaaactta	cattcaggat	aatttgaaca	accataaaaac	gatttttttta	atacaatatt	7080
gttgccacac	ttaggacatt	ttcctacaat	acttttttct	gcttcttttt	ctttctgttc	7140
ctggtaatca	gaaaaattta	gtttttctat	atcggttaggt	acagcttcca	gtaaatgaac	7200
aatgaatttt	ttgatattcg	taataaagtt	ctcttgattg	ccttctcttt	taccgatttt	7260
ttttaaatat	gtttcccatt	tagccgtcat	ttcagcactc	gttaaaaggt	gctgactttc	7320
aactgcctgg	cacaataatt	ttcctttttc	agttacaaca	agcttgccctg	caggtcgacg	7380
ataaccacat	aacagtcata	aaaccactcc	tttttaacaa	actttatcac	aagaaatatt	7440
ttggcattct	acgactataa	cttaaattta	tatttttttac	tttataatat	ataattgatt	7500
atagaataat	gttgctcata	tcgtttgcca	acatctagta	ctcaaattac	actatgttac	7560
acttggtaat	attaaccgaa	cttcccctgt	ccaaattaga	taagaggtaa	taataaatgg	7620
aaaataattt	tatagtaaat	gaaaatgaga	agcgtgtatt	aaaacaaatt	ttcaataaca	7680
gcaatatatt	acgaacacaa	atatcgaaga	atttagaact	taataaagct	actatttcta	7740
acattctgaa	caacttaaaa	cacaagagtt	tagttaatga	agtaggagaa	ggtaatagta	7800
ctaaaagtgg	tggaacgaaag	cctatttttac	tcgaaattaa	ccaaaaatat	ggctactata	7860
tttctatgga	tttaacatat	gattccgttg	aattaatgta	caactacttt	gatgctacta	7920
tattaaagca	agattcctac	gaattaaatg	ataaaaatgt	aagcagtata	ttacaaattt	7980



tgacgtttac	agaactaatc	caatattaca	acgaaggaaa	ttcaattggt	gctcatgaaa	1140
ttaaacaatt	tattaataaa	atgacagttc	tgattcataa	tttgaataca	caattttaacc	1200
cagacgctat	ttatatatac	tgtcctttta	ttaatgaatt	accaaataatt	ttaaatgaaa	1260
ttaaagagca	attctcctgt	ttttctcaag	gcagtccaat	tcaattacat	ttaactacta	1320
atgtaaaaaca	agctacttta	ttgggtggca	cttttagcaat	aatgcaaaaa	acattaaata	1380
taaataacat	tcaaataaat	attaaataat	tacagcagtc	tgagttataa	aatagatatc	1440
tcggaccgac	attaaattct	tgacagggag	agatagggtt	gatagaatat	aatagttgtc	1500
tcgagagtta	gtttgtttat	taaattaacc	aactggatcc	cgggtctaga	ttagggtaac	1560
tttgaaagga	tattcctcat	gcaagcta	cttcaatggt	tagatgaccc	agaagtcttc	1620
cgggtcaacc	aattacctgc	acatagtgat	caccattatt	atcacgacac	agcagaattc	1680
aaaacgggta	gtcgcttcat	caagagtctc	aatggcgctt	ggcgttttta	cttcgcccaag	1740
acaccggctg	aacgcccagt	tgatttttat	caaccgcatt	tcgatgcaac	cgactttgat	1800
acgattcaag	ttcccgggtc	tattgaacta	gccggctatg	gtcaaattca	atacattaac	1860
acgtataacc	catgggaagg	taaaattttac	cgtcgcccac	cgtataccct	caatcaagat	1920
caattaacac	caggcctatt	cagcgacgct	gcggacaaca	ccgtcggctc	gtacctcaaa	1980
accttcgatc	tcgacgatgt	ttttaaaggg	caacgtatta	tcattcagtt	ccaaggggta	2040
gaagaagccc	tgtacgtctg	gttaaattggc	cattttattg	gctactctga	agatagtttc	2100
accccttcag	aatttgattt	gacgccgtat	attcaggacc	aaggtaacgt	tttagcgggt	2160
cgggtctaca	aacacagtac	tgctgccttt	attgaagasc	caagatatgt	tccgtttctc	2220
tggtattttc	cgtgacgtca	atatactggc	ggagcctgct	agccatatta	ctgatttgga	2280
catccgacca	gttccaaatg	ccaatctcaa	aagtgggtgag	ctcaacatca	ctactaaagt	2340
aaccggcgaa	ccagccactt	tagcgctgac	cgttaaagac	catgacgggc	gagtactgac	2400
gagtcaaacg	caaaccggta	gtggcagtg	aacctttgat	actatgttat	tcgaccaact	2460
gcacttggtg	tcaccacaaa	cgccgtatct	ctatcaattg	acaattgaag	tttacgatgc	2520
tgatcaccaa	ctcttggaag	tcgtcccata	tcagtttggg	ttccggacgg	tcgagctgcg	2580
cgatgacaaa	gtcattttacg	tcaacaataa	acggttgggt	atcaacgggg	ttaaccggca	2640
cgaatggaac	gcccacaccg	gtcgcgttat	cagtatggct	gatatgcgcg	ctgatatcca	2700
aaccatgtta	gctaacaata	tcaatgccga	tcggacctgc	cattatcctg	atcaattacc	2760
ttgggtatcaa	ttatgtgacg	aggccgggtat	ctacctaatg	gccgaaacca	acctcgaatc	2820
gcacgggtca	tggcaaaaaga	tgggggctat	cgagccttct	tacaatgttc	ctggcgataa	2880
tcacactgg	ccagcagcgg	tgatcgaccg	ggcccgttca	aactacgaat	ggtttaaaaa	2940
ccacccatca	atcatttttt	ggtcacttgg	caatgaatcg	tatgctggcg	aagatatcgc	3000
ggcgatgcag	gctttttata	aagaacacga	tgattcacga	ctcgtccact	acgaaggcgt	3060
tttctacaca	ccagaattaa	aagatcgcat	ttctgatgtt	gaaagtcgga	tgtacgaaaa	3120
gccccaaaat	attgtagctt	acttggaaga	taacccaacc	aaacctttcc	taaattgtga	3180
atatatgcat	gacatgggga	attctctggg	cggtagtcaa	tcatataatg	atttgatcga	3240
caagtatcca	atgtatcaag	gtggctttat	ttgggacttt	attgatcaag	cactcttcgt	3300
tcatgaccca	atcaccgacc	aagacgtgct	ccggtatggc	ggtgatttcg	acgaacgcca	3360
ctccgattat	gcattctccg	gtaacggctt	aatgtttgcc	gaccggacac	caaaaccagc	3420
aatgcaagag	gtgaaatatt	attatggctt	acacaaataa	tcaactacac	gttattttacg	3480
gcgacgggag	cttaggacta	cagggggcta	atttccacta	cctcttttagc	tacgaacgtg	3540
ggggacttga	atcactcgtc	gtcaacgata	aagagtggct	ctatcgtaca	cccacgcca	3600
tgttttggcg	ggcgacaacc	gataatgatc	acggtagcgg	cttttcagtc	aaatccgcac	3660
agtggtagcg	ggccgataag	ttctcaactt	gtcaagatat	cgaattgacg	gttgacgacc	3720
aaccagtcac	accgttacca	atcgcgccac	tcaataacaa	atacacggat	cacgaaatcg	3780
ccacgaaagt	ctctctggct	taccacttcg	ttaccacgac	cgttcctagt	accatcgtca	3840
cagtgactta	tacggtgaca	gcagacggtc	agatcaatat	cgccacccat	tatagcggtc	3900
agtctgattt	gccagagcta	cccgcatttg	gtctgcgggt	tatcatgcca	actaccgcga	3960
ccggcttcga	ctataccggg	ttgtccgggtg	agacttatcc	tgaccggctg	gctggcgcaa	4020
cacacgggca	attccacggt	gacagtctgc	cagtcacacc	atacttggtc	ccacaagaat	4080
gcggcatgca	catgcaaact	gaacaagtga	cagtaacgcg	atcaacaaca	caaaataacg	4140
ctgaccacga	caacacacca	ttcagtttaa	catttagcca	aaccgatgca	ccattcgcct	4200
tcagctgcct	tcctataacc	gctgctgaac	tagaaaacgc	aacacacatg	gaagaattac	4260
cattagcacg	gcgaacggtc	ttatcaatct	acgggtgccg	tcgtgggggtc	ggtggcattg	4320
acagttgggg	aacggacgta	gaagccccat	atcatatcct	cgctaataca	gacattgact	4380



tcagctttaa	cattcatttc	taaaaattaa	tttgatttca	aaagaatcgc	tccggcagtt	4440
atltgccaga	gcgttctttt	aatatgtttt	atggctgagc	tttagtcctt	tgaagtgggg	4500
gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	4560
gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	4620
gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	4680
gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	4740
gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	4800
gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	4860
gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	4920
gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	4980
gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	5040
gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	5100
gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	5160
gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	5220
gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	5280
gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	gggggggggg	5340
gggggggggtc	gaccgatgcc	cttgagagcc	ttcaaccag	tcagctcctt	ccggtgggag	5400
cggggcatga	ctatcgtcgc	cgcacttatg	actgtcttct	ttatcatgca	actcgtagga	5460
caggtgccgg	cagcgtctctg	ggtcattttc	ggcgaggacc	gctttcgtctg	gagcgcgacg	5520
atgatcgcc	tgtcgcttgc	ggatattcga	atcttgacag	ccctcgctca	agccttcgtc	5580
actggtccc	ccaccaaacg	tttcggcgag	aagcaggcca	ttatcgccgg	catggcgcc	5640
gacgcgctgg	gctacgtctt	gctggcgctt	gcgacgcgag	gctggatggc	cttccccatt	5700
atgattcttc	tcgcttccgg	cggcatcggg	atgcccgcgt	tgcaggccat	gctgtccagg	5760
caggtagatg	acgaccatca	gggacagctt	caaggatcgc	tcgcggtctt	taccagccta	5820
acttcgatca	ctggaccgct	gatcgtcacg	gcgatttatg	ccgcctcggc	gagcacatgg	5880
aacgggttgg	catggattgt	aggcgccgcc	ctataccttg	tctgcctccc	cgcgttgctg	5940
cgcgggtgcat	ggagccgggc	cacctcgacc	tgaatggaag	ccggcgccac	ctcgctaacg	6000
gattcaccac	tccaagaatt	ggagccaatc	aattcttgcg	gagaactgtg	aatgcgcaaa	6060
ccaacccttg	gcagaacata	tccatcgcgt	ccgccatctc	cagcagccgc	acgcggcgca	6120
tctcgggcag	cgttggttcc	tggccacggg	tgcgcatgat	cgtgctcctg	tcgttgagga	6180
cccggctagg	ctggcggggt	tgccttactg	gttagcagaa	tgaatcaccg	atacgcgagc	6240
gaacgtgaag	cgactgctgc	tgcaaaacgt	ctgcgacctg	agcaacaaca	tgaatggtct	6300
tcggtttccg	tgtttcgtaa	agtctggaaa	cgcggaagtc	ccctacgtgc	tgctgaagtt	6360
gcccgcaca	gagagtggaa	ccaaccgggtg	ataccacgat	actatgactg	agagtcaacg	6420
ccatgagcgg	cctcatttct	tattctgagt	tacaacagtc	cgcaccgctg	tccggtagct	6480
ccttccgggtg	ggcgcggggc	atgactatcg	tcgccgcact	tatgactgtc	ttcttttatca	6540
tgcaactcgt	aggacaggtg	ccggcagcgc	ccaacagtcc	cccggccacg	gggcctgcca	6600
ccatacccac	gccgaaacaa	gcgccttgca	ccattatggt	ccggatctgc	atcgcaggat	6660
gctgctgggt	accctgtgga	acacctacat	ctgtattaac	gaagcgctaa	ccgtttttat	6720
caggctctgg	gaggcagaat	aaatgatcat	atcgtcaatt	attacctcca	cggggagagc	6780
ctgagcaaac	tggcctcagg	catttgagaa	gcacacggtc	acactgcttc	cggtagtcaa	6840
taaaccggta	aaccagcaat	agacataagc	ggctatttaa	cgaccctgcc	ctgaaccgac	6900
gaccgggtcg	aatttgcttt	cgaatttctg	ccattcatcc	gcttattatc	acttattcag	6960
gcgtagcacc	aggcgtttta	gggcaccaat	aactgcctta	aaaaaattac	gccccgccct	7020
gccactcatc	gcagtactgt	tgtaattcat	taagcattct	gccgacatgg	aagccatcac	7080
agacggcatg	atgaacctga	atcgccagcg	gcacacggac	cttgctgcct	tgcgtataat	7140
atltgcccac	ggtgaaaacg	ggggcggaag	agttgtccat	attggccacg	tttaaataca	7200
aactggtgaa	actcaccag	ggattggctg	agacgaaaaa	catattctca	ataaaccctt	7260
tagggaaata	ggccagggtt	tcaccgtaac	acgccacatc	ttgcgaatat	atgtgtagaa	7320
actgccggaa	atcgctcgtg	tattcactcc	agagcgatga	aaacgtttca	gtttgctcat	7380
ggaaaacggt	gtaacaaggg	tgaacactat	cccatatcac	cagctcaccg	tctttcattg	7440
ccatacgaat	tcagagggtt	gatgactttg	acctttgggt	ttaaattttt	gaaaaaaata	7500
aaaaaaggcg	aagcctatta	tatatattat	atatatatatt	taatcttttg	ttcttttgcg	7560
tgaaaaaaaa	ggcagtgttt	tcgctagtta	tagaaattaa	acagtcacaa	aaatcgatgt	7620
atacagtcac	aaaaatcgat	ttttgtgact	ctatgcatcg	atgtatacga	gtcacaaaaa	7680







cgttgggtcc	tggccacggg	tgcgcacgat	cgtgctcctg	tcgttgagga	cccggctagg	840
ctggcggggg	tgccttactg	gttagcagaa	tgaatcaccg	atacgcgagc	gaacgtgaag	900
cgactgctgc	tgcaaaacgt	ctgcgacctg	agcaacaaca	tgaatgggtct	tcggtttccg	960
tgtttcgtaa	agtctggaaa	cgcggaagtc	ccctacgtgc	tgctgaagtt	gcccgcaca	1020
gagagtggaa	ccaaccgggtg	ataccacgat	actatgactg	agagtcaacg	ccatgagcgg	1080
cctcattttct	tattctgagt	tacaacagtc	cgcaccgctg	tccggtagct	ccttccgggtg	1140
ggcgcggggc	atgactatcg	tgcgcgact	tatgactgtc	ttcttttatca	tgcaactcgt	1200
aggacagggtg	ccggcagcgc	ccaacagtcc	cccggccacg	gggcctgcc	ccataccac	1260
gccgaaacaa	gcgccctgca	ccattatggt	ccggatctgc	atcgcaggat	gctgctggct	1320
accctgtgga	acacctacat	ctgtattaac	gaagcgctaa	ccgtttttat	caggctctgg	1380
gaggcagaat	aatgatcat	atcgtcaatt	attacctcca	cggggagagc	ctgagcaaac	1440
tggcctcagg	catttgagaa	gcacacggtc	acactgcttc	cggtagtcaa	taaaccggta	1500
aaccagcaat	agacataagc	ggctatttta	cgaccctgcc	ctgaaccgac	gaccgggtcg	1560
aatttgcttt	cgaattttctg	ccattcatcc	gcttattatc	acttattcag	gcgtagcacc	1620
aggcgtttaa	gggcaccaat	aactgcctta	aaaaaattac	gccccgccct	gccactcatc	1680
gcagtactgt	tgtaattcat	taagcattct	gccgacatgg	aagccatcac	agacggcatg	1740
atgaacctga	atcgccagcg	gcacacgac	cttgctgcct	tgcgataat	atttgcccat	1800
ggtgaaaacg	ggggcgaaga	agttgtccat	attggccacg	tttaaataca	aactggtgaa	1860
actcaccag	ggattgggtg	agacgaaaaa	catattctca	ataaaccctt	tagggaaata	1920
ggccagggttt	tcaccgtaac	acgccacatc	ttgcgaatat	atgtgtagaa	actgccggaa	1980
atcgtcgtgg	tattcactcc	agagcgatga	aaacgtttca	gtttgctcat	ggaaaacggt	2040
gtaacaaggg	tgaacactat	cccatatcac	cagctcaccg	tctttcattg	ccatacgaga	2100
ggtttgatga	ctttgacctt	tggtttttaa	tttttgaaaa	aaataaaaaa	aggcgaagcc	2160
tattatata	ttatcatata	tatttttaac	ttttgttctt	ttgcgtgaaa	aaaaaggcag	2220
tgttttcgtc	agttatagaa	attaaacagt	cacaaaaatc	gatgtataca	gtcacaaaaa	2280
tcgatttttg	tgactctatg	catcgatgta	tacgagtcac	aaaaatcgat	gtacacagta	2340
cgacttttgt	atttgtgtac	tgtatatagt	ataataaaag	catagagaaa	actcactatg	2400
aatgacttt	ctctatgcta	ctactaaaac	acgcaaagga	gcgtatttat	actatgatta	2460
taccagaaaa	acaaaacaaa	caaaagcagg	tgctgacctt	gaatgaatta	gaaaaacgca	2520
aagtagtgga	gcataacgct	ttaattcaaa	gtgtggctaa	aatgcaaaaa	acagctttta	2580
aatggttgga	gtagccgtg	tcttgatttg	ataccgaaga	acccccaaaa	aataatactg	2640
tttatctttt	aaaatctgaa	cttttttaaa	tttttgaaag	atcgtctagc	agtaagcata	2700
gtcaattcaa	agaagcagtt	aattatatgc	aaaagcaagc	cttttttcaat	attaaagctg	2760
ataagaaact	aggtattgag	tatgaaagca	ttgtgcctat	tccttatgta	aaatggaacg	2820
attataacga	tgaagtaaca	atagcttttg	accaagccat	tatgccctat	ctgattgatt	2880
taaaggcaga	atttactcaa	tataaaatth	ccgaactaca	aaaactcaat	agcaagtatt	2940
cgattattht	gtatcgttgg	ttatccatga	attataacca	atacgaacat	tacagcgtga	3000
aagggggacg	gagagtggaa	caagtggaa	cctaccgcaa	cccctcaata	aaagtgaag	3060
aattgcgaga	aataactgat	acaataaatg	aacatcaaca	ttttcccat	tttgaaacta	3120
gagtattaaa	aaaagcaatt	gaagaaatca	acgctcacac	ctctttttaat	gtaacctatg	3180
agaaaaagaa	agcagggcgg	agcattgact	ctattgtctt	tcatattgag	aagaaacgca	3240
tggcagacga	taacagttac	aagttgggag	ataaagacta	tcaagacgat	aaaaagcaaa	3300
aatcaagaaa	tgaagctgac	ttactaaaac	aggcaatgga	aagtaaata	acaagacttt	3360
tatctgaaaa	tttcttaatt	ggcatgaatg	atattatgga	tacagccaca	atggtaggct	3420
tacagaagaa	tgtttatccg	ctttatgacg	aactgaaaga	attaagaggg	ctaaatgggtg	3480
tcaaagacca	cttgctcttat	gttgccagca	aaaaagaagc	ctattctaaa	cgtaatgtag	3540
cgaaatatct	taaaaaagcc	attgaacaat	atctgccaac	ggttaaaagg	caggacttaa	3600
accatgagtg	aagacttaaa	aacgataaaa	gagttggcgg	acgagctagg	actagctaaa	3660
cagaccgttc	aataccattt	aaagtttttg	ccgaccgaaa	atcgacaaaa	aaacaatagt	3720
ggttcgatcg	tcctaaacct	tgaagaacaa	aagtttatca	aaaaaagact	aacaaaaata	3780
aaaaaagttc	aaccgaccga	aaatcgacaa	gaaaaaatga	agaattaagc	gttaatagtc	3840
ttttgttagg	cggatgagca	ttcatcaggc	gggcaagaat	gtgaataaag	gccggataaa	3900
acttgtgctt	atthttcttt	acggtcttta	aaaaggccgt	aatatccagc	tgaacgggtct	3960
ggttatagg	acattgagca	actgactgaa	atgcctcaaa	atgttcttta	cgatgccatt	4020
gggatatatc	aacgggtggta	tatccagtg	tttttttctc	catttttagct	tccttagctc	4080



ctgaaaatct	cgataactca	aaaaatacgc	ccggtagtga	tcttatttca	ttatggtgaa	4140
agttggaacc	tcttacgtgc	cgatcaacgt	ctcatttttcg	ccaaaagttg	gcccagggct	4200
tcccgggtatc	aacagggaca	ccaggattta	tttattctgc	gaagtgatct	tccgtcacag	4260
gtattttattc	ggcgcaaagt	gcgtcgggtg	atgctgccaa	cttactgatt	tagtgtatga	4320
tgggtgttttt	gaggtgctcc	agtggcttct	gtttctatca	gctgtccctc	ctgttcagct	4380
actgacgggg	tgggtgcgtaa	cggcaaaagc	accgccggac	atcagcgcta	gcggagtgtg	4440
tactggctta	ctatgttggc	actgatgagg	gtgtcagtga	agtgcctcat	gtggcaggag	4500
aaaaaaggct	gcaccgggtgc	gtcagcagaa	tatgtgatac	aggatatatt	ccgcttcctc	4560
gctcactgac	tcgctacgct	cggtcgttcg	actgcggcga	gcggaaatgg	cttacgaacg	4620
gggcgggagat	ttcctggaag	atgccaggaa	gatacttaac	agggaggtga	gagggccgcg	4680
gcaaagccgt	ttttccatag	gctccgcccc	cctgacaagc	atcacgaaat	ctgacgctca	4740
aatcagtggg	ggcgaaaccc	gacaggacta	taaagatacc	aggcgtttcc	ccctggcggc	4800
tccctcgtgc	gctctcctgt	tcctgccttt	cggtttaccg	gtgtcattcc	gctgttatgg	4860
ccgcgtttgt	ctcattccac	gcctgacact	cagttccggg	taggcagttc	gctccaagct	4920
ggactgtatg	cacgaacccc	ccgttcagtc	cgaccgctgc	gccttatccg	gtaactatcg	4980
tcttgagtcc	aacccggaaa	gacatgcaaa	agcaccactg	gcagcagcca	ctggtaattg	5040
atntagagga	gttagtcttg	aagtcatgcg	ccgggttaagg	ctaaactgaa	aggacaagtt	5100
ttggtgactg	cgctcctcca	agccagttac	ctcggttcaa	agagttggta	gctcagagaa	5160
ccttcgaaaa	accgccctgc	aaggcggttt	tttcgttttc	agagcaagag	attacgcgca	5220
gaccaaaacg	atctcaagaa	gatcatctta	ttaatcagat	aaaatatattc	tagatttcag	5280
tgcaattttat	ctcttcaaat	gtagcacctg	aagtcagccc	catacgatat	aagttgtaat	5340
tctcatgttt	gacagcttat	catcgataca	aattccccgt	aggcgctagg	gacctcttta	5400
gcttcttgga	agctgtcagt	agtatatcta	ataattttatc	tccattccct	ttagtaacgt	5460
gtaactttcc	aaatttaaaa	aagcgactca	tagaattatt	tcctcccgtt	aaataataga	5520
taactattaa	aaatagacaa	tacttgctca	taagtaatgg	tacttaaatt	gtttactttg	5580
gcgtgtttca	ttgcttgatg	aaactgattt	ttagtaaaca	gttgacgata	ttctcgattg	5640
acccattttg	aaacaaagta	cgtatatagc	ttccaatatt	tatctggaac	atctgtggta	5700
tggcgggttaa	gttttattaa	gacactgttt	acttttggtt	taggatgaaa	gcattccgct	5760
ggcagcttaa	gcaattgctg	aatcgagact	tgagtgtgca	agagcaaccc	tagtgttcgg	5820
tgaatatcca	aggtagctt	gtagaatcct	tcttcaacaa	tcagatagat	gtcagacgca	5880
cggctttcaa	aaaccacttt	tttaataatt	tgtgtgctta	aatggtaagg	aatattccca	5940
acaattttat	acctctgttt	gttagggaat	tgaaactgta	gaatatcttg	gtgaattaaa	6000
gtgacacgag	tattcagttt	taatttttct	gacgataagt	tgaatagatg	actgtctaata	6060
tcaatagacg	ttacctgttt	acttatttta	gccagtttcg	tcgttaaatg	ccctttacct	6120
gttccaattt	cgtaaacggg	atcggtttct	tttaaattca	attgttttat	tatttggttg	6180
agtacttttt	cactcgttta	aaagttttga	gaatatttta	tatttttggt	catgtaatct	6240
ctcctgaagt	gattacatct	ataaacaaat	acagaagtta	aacgatttgt	ttgtaatttt	6300
agttatctgt	ttaaaaagtc	ataagattag	tactggtag	gaattaatct	aacgtattta	6360
tttatctgcg	taatcactgt	tttttagtctg	tttcaaaaca	gtagatgttt	tatctacatt	6420
acgcattttg	aataccaaca	tgacgaatcc	ctccttctta	attacaaatt	tttagcatct	6480
aatttaactt	caattcctat	tatacaaaat	tttaagataa	tgcactatca	acacactctt	6540
aagtttgctt	ctaagtctta	tttccataac	ttctttttacg	tttccgccat	tctttgctgt	6600
ttcgattttt	atgatatggg	gcaagtcagc	acgaacacga	accgtcttat	ctcccattat	6660
atcttttttt	gcactgattg	gtgtatcatt	tcgtttttct	ttttgtgcgc	ctaaattttcc	6720
cacaatcact	cacttctttc	tatttcttct	tattcttatt	ttatcatcaa	caatcacaaa	6780
tcacttgatga	tttgtgataa	gtgatttggtg	ataagtgatt	tgtgattaat	atataaaagc	6840
cctcttttaa	gggcttttat	gtttattttg	agaaagatat	aaaatcaata	tatccctttt	6900
ccccaatttt	tacaacggca	ttgtagggtt	ttttctcttt	gttttttgatt	tcctttttacc	6960
agggtttctt	ttccctccag	taattctttt	acattcgttt	tgggttagttt	tttctttcta	7020
aaatgttcag	ctaaagtaaa	cttacattca	ggataatttg	aacaaccata	aaacgatttt	7080
tttaatacaa	tattgttgcc	acacttagga	catttttcta	caatactttt	ttctgcttct	7140
ttttctttct	gttcctggta	atcagaaaaa	tttagttttt	ctatatcggt	aggtagagct	7200
tccagtaaat	gaacaatgaa	ttttttgata	ttcgtaataa	agttctcttg	attgccttct	7260
cttttaccga	ttttttttta	atacgtttcc	catttagccg	tcatttcagc	actcgttaaa	7320
agggtgctgac	tttcaactgc	ctggcacaat	aattttcctt	tttcagttac	aacagcctgc	7380





catggattgt	aggcgccgcc	ctataccttg	tctgcctccc	cgcggttgcgt	cgcggtgcat	600
ggagccgggc	cacctcgacc	tgaatggaag	cggcgggcac	ctcgctaacg	gattcaccac	660
tccaagaatt	ggagccaatc	aattcttgcg	gagaactgtg	aatgcgcaaa	ccaacccttg	720
gcagaacata	tccatcgcg	cgcctatctc	cagcagccgc	acgcggcgca	tctcgggcag	780
cgttggttcc	tggccacggg	tgcgcgatgat	cgtgctcctg	tcgttgagga	cccggctagg	840
ctggcggggg	tgccttactg	gttagcagaa	tgaatcaccg	atacgcgagc	gaacgtgaag	900
cgactgctgc	tgcaaaacgt	ctgcgacctg	agcaacaaca	tgaatggtct	tcggtttccg	960
tgtttcgtaa	agtctggaaa	cgcggaagtc	ccctacgtgc	tgctgaagtt	gcccgcaca	1020
gagagtggaa	ccaaccgggtg	ataccacgat	actatgactg	agagtcaacg	ccatgagcgg	1080
cctcattttct	tattctgagt	tacaacagtc	cgcaccgctg	tccggtagct	ccttccgggtg	1140
ggcgcggggc	atgactatcg	tcgccgcact	tatgactgtc	ttcttttatca	tgcaactcgt	1200
aggacagggtg	ccggcagcgc	ccaacagtcc	cccggccacg	gggcctgcca	ccatacccac	1260
gccgaaacaa	gcgcccctgca	ccattatgtt	ccggatctgc	atcgcaggat	gctgctgggt	1320
accctgtgga	acacctacat	ctgtattaac	gaagcgctaa	ccgtttttat	caggctctgg	1380
gaggcagaat	aatgatcat	atcgtcaatt	attacctcca	cggggagagc	ctgagcaaac	1440
tggcctcagg	catttgagaa	gcacacggtc	acactgcttc	cggtagtcaa	taaaccggta	1500
aaccagcaat	agacataagc	ggctatttta	cgaccctgcc	ctgaaccgac	gaccgggtcg	1560
aatttgcttt	cgaattttctg	ccattcatcc	gcttattatc	acttattcag	gcgtagcacc	1620
aggcgtttaa	gggcaccaat	aactgcctta	aaaaaattac	gccccgccct	gccactcatc	1680
gcagtactgt	tgtaattcat	taagcattct	gccgacatgg	aagccatcac	agacggcatg	1740
atgaacctga	atcgccagcg	gcacacgac	cttgctgcct	tgcgtataat	atttgcccat	1800
ggtgaaaacg	ggggcgaaga	agttgtccat	attggccacg	tttaaataca	aactggtgaa	1860
actcaccag	ggattggctg	agacgaaaaa	catattctca	ataaaccctt	tagggaaata	1920
ggccagggtt	tcaccgtaac	acgccacatc	ttgcgaatat	atgtgtagaa	actgccggaa	1980
atcgtcgtgg	tattcactcc	agagcgatga	aaacgtttca	gtttgctcat	ggaaaacggt	2040
gtaacaagg	tgaacactat	cccatatcac	cagctcaccg	tctttcattg	ccatacgaat	2100
tcagagggtt	gatgactttg	acctttgggt	ttaaattttt	gaaaaaaata	aaaaaaggcg	2160
aagcctatta	tatatattatc	atatatatatt	taatcttttg	ttcttttgcg	tgaaaaaaa	2220
ggcagtgttt	tcgctagtta	tagaaattaa	acagtcacaa	aaatcgatgt	atacagtcac	2280
aaaaatcgat	ttttgtgact	ctatgcacgc	atgtatacga	gtcacaaaaa	tcgatgtaca	2340
cagtacgact	tttgatattg	tgtactgtat	atagtataat	aaaagcatag	agaaaactca	2400
ctatgaaatg	actttctcta	tgctactact	aaaacacgca	aaggagcgta	tttatactat	2460
gattatacca	gaaaaacaaa	acaaacaaaa	gcagggtgctg	accttgaatg	aattagaaaa	2520
acgcaaagta	gtggagcata	acgctttaat	tcaaagtgtg	gctaaaatgc	aaaaaacagc	2580
tttaaaaatg	tttgagttag	ccgtgtcttg	tattgatacc	gaagaacccc	caaaaaataa	2640
tactgtttat	cttttaaaat	ctgaactttt	taaatttttt	gaagtatcgt	ctagcagtaa	2700
gcatagtcaa	ttcaaagaag	cagttaatta	tatgcaaaag	caagcctttt	tcaatatata	2760
agctgataag	aaactaggta	ttgagtatga	aagcattgtg	cctattcctt	atgtaaaatg	2820
gaacgattat	aacgatgaag	taacaatacg	ttttgaccaa	gccattatgc	cctatctgat	2880
tgatttaaa	gcagaattta	ctcaatataa	aattttccga	ctacaaaaac	tcaatagcaa	2940
gtattcgatt	attttgtatc	gttggttatc	catgaattat	aaccaatacg	aacattacag	3000
cgtgaaagg	ggacggagag	ttgaacaagt	ggaatcctac	cgcaaccctt	caataaaagt	3060
gaaagaattg	cgagaaataa	ctgatacaat	aatgaacat	caacattttt	ccatttttga	3120
aactagagta	ttaaaaaaag	caattgaaga	aatcaacgct	cacacctctt	ttaatgtaac	3180
ctatgagaaa	aagaaagcag	ggcggagcat	tgactctatt	gtctttcata	ttgagaagaa	3240
acgcatggca	gacgataaca	gttacaagtt	gggagataaa	gactatcaag	acgataaaaa	3300
gcaaaaatca	agaaatgaag	ctgacttact	aaaacaggca	atggaaagta	aatatacaag	3360
acttttatct	gaaaattttct	taattggcat	gaatgatatt	atggatacag	ccacaatggt	3420
aggcttacag	aagaatgttt	atccgcttta	tgacgaactg	aaagaattaa	gagggtctaaa	3480
tggtgtcaaa	gaccacttgt	cttatgttgc	cagcaaaaaa	gaagcctatt	ctaaacgtaa	3540
tgtagcgaaa	tatcttaaaa	aagccattga	acaatatctg	ccaacggtta	aaaggcagga	3600
cttaaaccat	gagtgaagac	ttaaaaacga	taaaagagtt	ggcggacgag	ctaggactag	3660
ctaaacagac	cgttcaatac	catttaaagt	ttttgccgac	cgaaaatcga	caaaaaaaca	3720
atagtggttc	gatcgtccta	aaccttgaag	aacaaaagtt	tatcaaaaaa	agactaacia	3780
aaataaaaaa	agttcaaccg	accgaaaatc	gacaagaaaa	aatgaagaat	taagcgttaa	3840

tagtcttttg	ttaggaattc	cggatgagca	ttcatcaggc	gggcaagaat	gtgaataaag	3900
gccggataaa	acttgtgctt	atTTTTcttt	acgggtcttta	aaaaggccgt	aatatccagc	3960
tgaacgggtct	ggttataggt	acattgagca	actgactgaa	atgcctcaaa	atgttcttta	4020
cgatgccatt	gggatataatc	aacgggtggt	tatccagtga	tttttttctc	catttttagct	4080
tccttagctc	ctgaaaatct	cgataactca	aaaaatacgc	ccggtagtga	tcttatttca	4140
ttatggtgaa	agttggaacc	tcttacgtgc	cgatcaacgt	ctcattttcg	ccaaaagttg	4200
gcccagggtc	tcccgggtatc	aacagggaca	ccaggattta	tttattctgc	gaagtgatct	4260
tccgtcacag	gtattttattc	ggcgcaaagt	gcgtcgggtg	atgctgccaa	cttactgatt	4320
tagtgatga	tggtgttttt	gaggtgctcc	agtggcttct	gtttctatca	gctgtccctc	4380
ctgttcagct	actgacgggg	tggtgcgtaa	cggcaaaagc	accgccggac	atcagcgcta	4440
gcggtggtga	tactggctta	ctatgttggc	actgatgagg	gtgtcagtga	agtgttcat	4500
gtggcaggag	aaaaaaggct	gcaccgggtgc	gtcagcagaa	tatgtgatac	aggatatatt	4560
ccgttctctc	gctcactgac	tcgctacgct	cggtcgttcg	actgcggcga	gcggaaatgg	4620
cttacgaacg	gggcggagat	ttcctggaag	atgccaggaa	gatacttaac	agggaagtga	4680
gagggccgcg	gcaaagccgt	ttttccatag	gctccgcccc	cctgacaagc	atcacgaaat	4740
ctgacgctca	aatcagtggg	ggcgaaaccc	gacaggacta	taaagatacc	aggcgtttcc	4800
ccctggcggc	tccctcgtgc	gctctcctgt	tcctgccttt	cggtttaccg	gtgtcattcc	4860
gctgttatgg	ccgcgtttgt	ctcattccac	gcctgacact	cagttccggg	taggcagttc	4920
gctccaagct	ggactgtatg	cacgaacccc	ccgttcagtc	cgaccgctgc	gccttatccg	4980
gtaactatcg	tcttgagtcc	aaccgcgaaa	gacatgcaaa	agcaccactg	gcagcagcca	5040
ctggtaattg	atttagagga	gttagtcttg	aagtcatgcg	ccggttaagg	ctaaactgaa	5100
aggacaagtt	ttggtgactg	cgctcctcca	agccagttac	ctcggttcaa	agagttggta	5160
gctcagagaa	ccttcgaaaa	accgccctgc	aaggcggttt	tttcgttttc	agagcaagag	5220
attacgcgca	gaccaaaccg	atctcaagaa	gatcatctta	ttaatcagat	aaaatatattc	5280
tagatttcag	tgcaatttat	ctcttcaaat	gtagcacctg	aagtcagccc	catacgatat	5340
aagttgtaat	tctcatgttt	gacagcttat	catcgataca	aattccccgt	aggcgctagg	5400
gacctcttta	gcttcttgga	agctgtcagt	agtatatcta	ataattttatc	tccattccct	5460
ttagtaacgt	gtaactttcc	aaatttataaa	aagcgactca	tagaattatt	tcctcccgtt	5520
aaataataga	taactattaa	aaatagacaa	tacttgctca	taagtaatgg	tacttaaatt	5580
gtttactttg	gcgtgtttca	ttgcttgatg	aaactgattt	ttagtaaaca	gttgacgata	5640
ttctcgattg	accatttttg	aaacaaagta	cgtatatagc	ttccaatatt	tatctggaac	5700
atctgtggta	tggcgggtaa	gttttattaa	gacactgttt	acttttggtt	taggatgaaa	5760
gcattccgct	ggcagcttaa	gcaattgctg	aatcgagact	tgagtgtgca	agagcaaccc	5820
tagtggtcgg	tgaatatcca	aggtacgctt	gtagaatcct	tcttcaacaa	tcagatagat	5880
gtcagacgca	cggctttcaa	aaaccacttt	tttaataatt	tgtgtgctta	aatggtaagg	5940
aatattccca	acaattttat	acctctgttt	gttaggggaat	tgaaactgta	gaatatcttg	6000
gtgaattaaa	gtgacacgag	tattcagttt	taatttttct	gacgataagt	tgaatagatg	6060
actgtctaata	tcaatagacg	ttacctgttt	acttatttta	gccagtttctg	tcgttaaagt	6120
ccctttacct	gttccaattt	cgtaaaccgt	atcggtttct	tttaaattca	attgttttat	6180
tatttggttg	agtacttttt	cactcgttaa	aaagttttga	gaatatttta	tatttttggt	6240
catgtaatct	ctcctgaagt	gattacatct	ataaacaaat	acagaagtta	aacgatttgt	6300
ttgtaatttt	agttatctgt	ttaaaaagtc	ataagattag	tcactggtag	gaattaatct	6360
aacgtatttt	tttatctgcg	taatcactgt	ttttagttctg	tttcaaaaca	gtagatgttt	6420
tatctacatt	acgcattttg	aataccaaca	tgacgaatcc	ctccttctta	attacaaatt	6480
tttagcatct	aattttaactt	caattcctat	tatacaaaat	tttaagataa	tgcactatca	6540
acacactctt	aagtttgctt	ctaagtctta	tttccataac	ttctttttacg	tttccgccat	6600
tctttgctgt	ttcgattttt	atgatattgt	gcaagtcagc	acgaacacga	accgtcttat	6660
ctcccattat	atcttttttt	gcactgattg	gtgtatcatt	tcgtttttct	ttttgtgcgc	6720
ctaaattttcc	cacaatcact	cacttctttc	tatttcttct	tattcttatt	ttatcatcaa	6780
caatcacaaa	tcacttgatga	tttgtgataa	gtgatttgtg	ataagtgatt	tgtgattaat	6840
atataaaaagc	cctcttttaa	gggcttttat	gtttattttg	agaaagatat	aaaatcaata	6900
tatccctttt	ccccattttt	tacaacggca	ttgtagggct	ttttctcttt	gttttttgatt	6960
tccttttacc	agggtttctt	ttccctccag	taattctttt	acattcgttt	tggttagttt	7020
tttctttctc	aaatgttcag	ctaaagtaaa	cttacattca	ggataatttg	aacaaccata	7080
aaacgatttt	tttaatacaa	tattgttgcc	acacttagga	cattttccta	caatactttt	7140

```

ttctgcttct ttttctttct gttcctggta atcagaaaaa tttagttttt ctatatcggt 7200
aggtacagct tccagtaaat gaacaatgaa ttttttgata ttcgtaataa agttctcttg 7260
attgccttct cttttaccga ttttttttaa atacgtttcc catttagccg tcatttcagc 7320
actcggtaaa aggtgctgac tttcaactgc ctggcacaat aattttcctt tttcagttac 7380
aacagcctgc aggtcgacga taaccacata acagtcataa aaccactcct ttttaacaaa 7440
ctttatcaca agaaatatatt tggcattcta cgactataac ttaaatttat attttttact 7500
ttataatata taattgatta tagaataatg ttgctcatat cgtttgccaa catctagtag 7560
tcaaattaca ctatgttaca cttggtaata ttaaccgaac ttcccctgtc caaattagat 7620
aagaggtaat aataaatgga aaataatttt atagtaaagt aaaatgagaa gcgtgtatta 7680
aaacaaattt tcaataacag caatatattca cgaacacaaa tatcgaagaa tttagaactt 7740
aataaagcta ctattttctaa cattctgaac aacttaaaac acaagagttt agttaatgaa 7800
gtaggagaag gtaatagtag taaaagtggg ggacgaaagc ctattttact cgaaattaac 7860
caaaaatatg gctactatat ttctatggat ttaacatatg attccgttga attaatgtac 7920
aactactttg atgctactat attaaagcaa gattcctacg aattaaatga taaaaatgta 7980
agcagtatat tacaaatttt aaaatctaata ataaacgtct cagaaaaata tgatacgtta 8040
tatgggttac ttgggtatata tatatccata cacggtatcg ttgacgatga gcaaaacata 8100
atcaatcttc cttttcataa aaatgagaaa cgcacattta ccgatgaatt aaagtcattc 8160
acaaatgttc ctgtcgttat agaaaatgaa gcaaatttat cagcgctata tgaaaaaagt 8220
ttatatatta attcaaacad aaataatttg attactttta gtattcacia ggggtataggc 8280
gctggcatca taataaataa aaaactttat cgtggctcaa atggagaggc tggagagata 8340
ggtaagacat tggtttttga atctataaat aacaatgaca acaaatatta taaaatcgaa 8400
gatatatgct cccaagagcg tttataacag aaaataaata atagggttggg cgtcacattg 8460
acgttttacag aactaatcca atattacaac gaaggaaatt caattgttgc tcatgaaatt 8520
aaacaattta ttaataaaat gacagttctg attcataatt tgaatacaca atttaacca 8580
gacgctattt atattaactg tcctttaatt aatgaattac caaatatttt aaatgaaatt 8640
aaagagcaat tctcctgttt ttctcaaggc agtccaattc aattacattt aactactaat 8700
gtaaaacaag ctactttatt ggggtggcact ttagcaataa tgcaaaaaac attaaatata 8760
aataacattc aatgaatat taaataatta cagcagtcct agttataaaa tagatatctc 8820
ggaccggtct agttattctt gacaaaaaat aatattttga tataattaaa tagttgtcgt 8880
ttgataaacac agtttattct tgacaaaaaa atataaaagt gtataataga aaagtactgt 8940
tctcgagagt tagtttgttt attaaattaa ccaactggac gaattcccgg ggatccgtcg 9000
acctgcagcc aagcttgggc ttttcagcct gatacagatt aaatcagaac gcagaagcgg 9060
tctgataaaa cagaatttgc ctggcgccag tagcgcggtg gtcccacctg accccatgcc 9120
gaactcagaa gtgaaacgcc gtagcgccga tggtagtggt ggggtctccc atgcgagagt 9180
agggaactgc caggcatcaa ataaaacgaa aggcctcagtc gaaagactgg gcctttcgtt 9240
ttatctgttg tttgtcgggtg aacgctctcc tgagtaggac aaatccgccg ggagcggatt 9300
tgaacgttgc gaagcaacgg cccggagggt ggcgggcagg acgcccgcga taaactgcca 9360
ggcatcaaat taagcagaag gccatcctga cggatggcct ttttgcgttt ctacaaactc 9420
tttttgttta tttttctaaa tacattcaaa tatgtatccg ctgatcccca tcctatcgat 9480
cccc

```

<210> 50  
 <211> 9566  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Vector pEPEF18

<400> 50  
 acccagtcag ctcttccgg tgggcgcggg gcatgactat cgtcgccgca cttatgactg 60  
 tcttctttat catgcaactc gtaggacagg tgccggcagc gctctgggtc attttcggcg 120  
 aggaccgctt tcgctggagc gcgacgatga tcggcctgtc gcttgccggtt ttcggaatct 180



tgcacgccct	cgctcaagcc	ttcgtcactg	gtccccccac	caaacgtttc	ggcgagaagc	240
aggccattat	cgccggcatg	gcgggccgacg	cgctgggcta	cgtcttgctg	gcgttcgcga	300
cgcgaggctg	gatggccttc	cccattatga	ttctttctcg	ttccggcggc	atcgggatgc	360
ccgcgttgca	ggccatgctg	tccaggcagg	tagatgacga	ccatcaggga	cagcttcaag	420
gatcgctcgc	ggctcttacc	agcctaactt	cgatcactgg	accgctgac	gtcacggcga	480
tttatgccgc	ctcggcgagc	acatggaacg	ggttggcatg	gattgtaggc	gccgccctat	540
accttgtctg	cctccccgcg	ttgcgtcgcg	gtgcatggag	ccggggccacc	tcgacctgaa	600
tggaaagccg	cggcacctcg	ctaacggatt	caccactcca	agaattggag	ccaatcaatt	660
cttgccggaga	actgtgaatg	cgcaaaccac	cccttggcag	aacatatcca	tcgcgtccgc	720
catctccagc	agccgcacgc	ggcgcatctc	gggcagcgtt	gggtcctggc	cacgggtgcg	780
catgatcgtg	ctcctgtcgt	tgaggacccg	gctaggctgg	cggggttgcc	ttactggtta	840
gcagaatgaa	tcaccgatac	gcgagcgaac	gtgaagcgac	tgctgctgca	aaacgtctgc	900
gacctgagca	acaacatgaa	tggtcttcgg	tttccgtgtt	tcgtaaagtc	tggaaacgcg	960
gaagtccctt	acgtgctgct	gaagttgccc	gcaacagaga	gtggaaccaa	ccggtgatac	1020
cacgatacta	tgactgagag	tcaacgccat	gagcggcctc	atttcttatt	ctgagttaca	1080
acagtccgca	ccgctgtccg	gtagctcctt	ccggtgggcg	cggggcatga	ctatcgtcgc	1140
cgcacttatg	actgtcttct	ttatcatgca	actcgtagga	caggtgccgg	cagcgcccaa	1200
cagtcccccg	gccacggggc	ctgccaccat	accacgccc	aaacaagcgc	cctgcaccat	1260
tatgttccgg	atctgcatcg	caggatgctg	ctggctaccc	tgtggaacac	ctacatctgt	1320
attaacgaag	cgctaaccgt	ttttatcagg	ctctgggagg	cagaataaat	gatcatatcg	1380
tcaattatta	cctccacggg	gagagcctga	gcaaaactgg	ctcaggcatt	tgagaagcac	1440
acggtcacac	tgcttccggg	agtcaataaa	ccggtaaacc	agcaatagac	ataagcggct	1500
atttaacgac	cctgccctga	accgacgacc	gggtcgaatt	tgctttcgaa	tttctgccat	1560
tcatccgctt	attatcactt	attcaggcgt	agcaccaggc	gtttaagggc	accaataact	1620
gccttaaaaa	aattacgccc	cgccctgcca	ctcatcgag	tactgttgta	attcattaag	1680
cattctgccg	acatggaagc	catcacagac	ggcatgatga	acctgaatcg	ccagcggcat	1740
cagcaccttg	tcgccttgcg	tataatat	gcccattggt	aaaacggggg	cgaagaagtt	1800
gtccatattg	gccacgttta	aatcaaaact	ggtgaaactc	accagggat	tggttgagac	1860
gaaaaacata	ttctcaataa	accctttagg	gaaataggcc	aggttttcac	cgtaacacgc	1920
cacatcttgc	gaatatatgt	gtagaaactg	ccggaaatcg	tcgtgggtatt	cactccagag	1980
cgatgaaaac	gtttcagttt	gctcatggaa	aacggtgtaa	caagggtgaa	cactatccca	2040
tatcaccagc	tcaccgtctt	tcattgccat	acgagagggt	tgatgacttt	gacctttggt	2100
tttaaatttt	tgaaaaaaat	aaaaaaaggc	gaagcctatt	atataattat	catatatatt	2160
ttaatctttt	gttcttttgc	gtgaaaaaaa	aggcagtgtt	ttcgctagtt	atagaaatta	2220
aacagtcaca	aaaatcgatg	tatacagtca	caaaaatcga	tttttgtgac	tctatgcatc	2280
gatgtatacg	agtcacaaaa	atcgatgtac	acagtacgac	ttttgtattt	gtgtactgta	2340
tatagtataa	taaaagcata	gagaaaactc	actatgaaat	gactttctct	atgctactac	2400
taaaacacgc	aaaggagcgt	atttatacta	tgattatacc	agaaaaacaa	aacaaacaaa	2460
agcagggtgct	gaccttgaat	gaattagaaa	aacgcaaagt	agtggagcat	aacgctttta	2520
ttcaaagtgt	ggctaaaatg	caaaaaacag	ctttaaaaat	gtttgagtta	gccgtgtctt	2580
gtattgatac	cgaagaaccc	ccaaaaata	atactgttta	tcttttaaaa	tctgaacttt	2640
ttaaattttt	tgaagtatcg	tctagcagta	agcatagtca	attcaaagaa	gcagttaatt	2700
atatgcaaaa	gcaagccttt	ttcaatatta	aagctgataa	gaaactaggt	attgagtatg	2760
aaagcattgt	gcctattcct	tatgtaaaa	ggaacgatta	taacgatgaa	gtaacaatac	2820
gttttgacca	agccattatg	ccctatctga	ttgatttaaa	ggcagaattt	actcaatata	2880
aaatttccga	actacaaaa	ctcaatagca	agtattcgat	tattttgtat	cgttgggttat	2940
ccatgaatta	taaccaatac	gaacattaca	gcgtgaaagg	gggacggaga	gttgaacaag	3000
tggaaatccta	ccgcaacccc	tcaataaaa	tgaaagaatt	gcgagaaata	actgatacaa	3060
taaatgaaca	tcaacatttt	ccccattttg	aaactagagt	attaaaaaaa	gcaattgaag	3120
aatcaacgc	tcacacctct	tttaattgta	cctatgagaa	aaagaaagca	gggcggagca	3180
ttgactctat	tgtctttcat	attgagaaga	aacgcatggc	agacgataac	agttacaagt	3240
tgggagataa	agactatcaa	gacgataaaa	agcaaaaatc	aagaaatgaa	gctgacttac	3300
taaaacaggc	aatggaaagt	aaatatacaa	gactttttat	tgaaaatttc	ttaattggca	3360
tgaatgatat	tatggataca	gccacaatgg	taggcttaca	gaagaatgtt	tatccgcttt	3420
atgacgaact	gaaagaatta	agagggctaa	atggtgtcaa	agaccacttg	tcttatgttg	3480

ccagcaaaaa	agaagcctat	tctaaacgta	atgtagcgaa	atatcttaaa	aaagccattg	3540
aacaatatct	gccaacggtt	aaaaggcagg	acttaaacca	tgagtgaaga	cttaaaaaacg	3600
ataaaagagt	tggcggacga	gctaggacta	gctaaacaga	ccgttcaata	ccattttaag	3660
tttttgccga	ccgaaaatcg	acaaaaaac	aatagtgggt	cgatcgtcct	aaaccttgaa	3720
gaacaaaagt	ttatcaaaaa	aagactaaca	aaaataaaaa	aagttcaacc	gaccgaaaat	3780
cgacaagaaa	aatgaagaa	ttaagcgtaa	atagtctttt	gttaggcgga	tgagcattca	3840
tcaggcgggc	aagaatgtga	ataaaggccg	gataaaaactt	gtgcttattt	ttcttttacgg	3900
tcttttaaaaa	ggccgtaata	tccagctgaa	cggctctgggt	ataggtagat	tgagcaactg	3960
actgaaatgc	ctcaaaatgt	tcttttacgat	gccattggga	tatatcaacg	gtggtatatc	4020
cagtgatttt	tttctccatt	ttagcttcct	tagctcctga	aaatctcgat	aactcaaaaa	4080
atacgcccg	tagtgatctt	atttcattat	ggtgaaagtt	ggaacctctt	acgtgccgat	4140
caacgtctca	ttttcgccaa	aagttggccc	agggtctccc	ggtatcaaca	gggacaccag	4200
gattttattta	ttctgcgaag	tgatcttccg	tcacagggtat	ttattcggcg	caaagtgcgt	4260
cgggtgatgc	tgccaactta	ctgatttagt	gtatgatggg	gtttttgagg	tgctccagtg	4320
gcttctgttt	ctatcagctg	tccctcctgt	tcagctactg	acggggtggg	gcgtaacggc	4380
aaaagcaccg	ccggacatca	gcgctagcgg	agtgtatact	ggcttactat	gttggcactg	4440
atgagggtgt	cagtgaagtg	cttcatgtgg	caggagaaaa	aaggctgcac	cgggtgcgtca	4500
gcagaatatg	tgatacagga	tatattccgc	ttcctcgcct	actgactcgc	tacgctcggg	4560
cgttcgactg	cggcgagcgg	aaatggctta	cgaacggggc	ggagatttcc	tggaagatgc	4620
caggaagata	cttaacaggg	aagtgagagg	gccgcggcaa	agccgttttt	ccataggctc	4680
cgccccctg	acaagcatca	cgaaatctga	cgctcaaate	agtgggtggc	aaacccgaca	4740
ggactataaa	gataccaggc	gtttccccct	ggcggctccc	tcgtgcgcct	tcctgttcct	4800
gcctttcggg	ttaccgggtg	cattccgctg	ttatggccgc	gtttgtctca	ttccacgcct	4860
gacactcagt	tccgggtagg	cagttcgcct	caagctggac	tgtatgcacg	aacccccctg	4920
tcagtcgcac	cgtgcgcct	tatccggtaa	ctatcgtctt	gagtcacaac	cggaaagaca	4980
tgcaaaagca	ccactggcag	cagccactgg	taattgattt	agaggagtta	gtcttgaagt	5040
catgcgcggg	ttaaggctaa	actgaaagga	caagtttttg	tgactgcgct	cctccaagcc	5100
agttacctcg	gttcaaagag	ttggtagctc	agagaacctt	cgaaaaaccg	ccctgcaagg	5160
cggttttttc	gttttcagag	caagagatta	cgcgcagacc	aaaacgatct	caagaagatc	5220
atcttattaa	tcagataaaa	tattttctaga	tttcagtgca	atcttatctt	tcaaatgtag	5280
cacctgaagt	cagccccata	cgatataagt	tgtaattctc	atgtttgaca	gcttatcatc	5340
gatacaaatt	ccccgtaggc	gctagggacc	tcttttagctt	cttggaagct	gtcagtagta	5400
tatctaataa	tttatctcca	ttcccttttag	taacgtgtaa	ctttccaaat	ttaaaaaagc	5460
gactcataga	attatttcct	cccgttaaat	aatagataac	tattaaaaat	agacaatact	5520
tgctcataag	taatgggtact	taaattgttt	actttggcgt	gtttcattgc	ttgatgaaac	5580
tgattttttag	taaacagttg	acgatattct	cgattgaccc	atctttgaaac	aaagtacgta	5640
tatagcttcc	aatattttatc	tggaacatct	gtgggtatggc	gggtaagtgt	tattaagaca	5700
ctgtttactt	ttggtttagg	atgaaagcat	tccgctggca	gcttaagcaa	ttgctgaatc	5760
gagacttgag	tgtgcaagag	caaccctagt	gttcgggtgaa	tatccaaggt	acgcttgtag	5820
aatccttctt	caacaatcag	atagatgtca	gacgcacggc	tttcaaaaac	cactttttta	5880
ataatttggtg	tgcttaaagt	gtaaggaata	ttcccaacaa	ttttataacct	ctgtttgtta	5940
gggaattgaa	actgtagaat	atcttggtga	attaaagtga	cacgagtatt	cagttttaat	6000
ttttctgacg	ataagttgaa	tagatgactg	tctaattcaa	tagacgttac	ctgtttactt	6060
atcttagcca	gtttcgtcgt	taaatgcctt	ttacctgttc	caatttcgta	aacggtatcg	6120
gtttctttta	aattcaattg	ttttattatt	tggttgagta	ctttttcact	cgttaaaaag	6180
ttttgagaat	atcttatatt	tttggttcatt	taatctctcc	tgaagtgatt	acatctataa	6240
acaaatacag	aagttaaacg	atctgtttgt	aatttttagtt	atctgtttta	aaagtcataa	6300
gattagtcac	tggttaggaat	taatctaacg	tattttattta	tctgcgtaat	cactgttttt	6360
agtctgtttc	aaaacagtag	atgtttttatc	tacattacgc	atcttggata	ccaacatgac	6420
gaatccctcc	ttcttaatta	caaattttta	gcattctaatt	taacttcaat	tcctattata	6480
caaaattttta	agataatgca	ctatcaacac	actcttaagt	ttgcttctaa	gtctttatttc	6540
cataacttct	tttacgtttc	cgccattctt	tgctgtttcg	atcttttatga	tatgggtgcaa	6600
gtcagcacga	acacgaaccg	tcttatctcc	cattatatct	ttttttgcac	tgattgggtg	6660
atcatttcgt	ttttcttttt	gtgcgcctaa	atctcccaca	atcactcact	tctttctatt	6720
tcttcttatt	cttatttttat	catcaacaat	cacaaatcac	ttgtgatttg	tgataagtga	6780



```

tttgtgataa gtgatttgtg attaatatat aaaagccctc tttaaagggc ttttatgttt 6840
attttgagaa agatataaaa tcaatatatc ctttttcccc aattttttaca acggcattgt 6900
agggcttttt ctctttgttt ttgatttcct tttaccaggg tttcttttcc ctccagtaat 6960
tcttttacat tcgttttggg tagttttttc tttctaaaat gttcagctaa agtaaactta 7020
cattcaggat aatttgaaca accataaaac gattttttta atacaatatt gttgccacac 7080
ttaggacatt ttcctacaat acttttttct gcttcttttt ctttctgttc ctggtaatca 7140
gaaaaattta gtttttctat atcgtttagg acagcttcca gtaaatgaac aatgaatttt 7200
ttgatattcg taataaagtt ctcttgattg ccttctcttt taccgatttt ttttaaatac 7260
gtttcccat tagccgtcat ttcagcactc gttaaaaggt gctgactttc aactgcctgg 7320
cacaataatt ttcctttttc agttacaaca gcctgcaggc cgacgataac cacataacag 7380
tcataaaaacc actccttttt aacaaacttt atcacaagaa atattttggc attctacgac 7440
tataacttaa atttataatt tttactttat aatatataat tgattataga ataattgttg 7500
tcatatcggt tgccaacatc tagtactcaa attacactat gttacacttg gtaatatata 7560
ccgaacttcc cctgtccaaa ttagataaga ggtaataata aatggaaaat aattttatag 7620
taaataaaaa tgagaagcgt gtattaaaac aaattttcaa taacagcaat atttcacgaa 7680
cacaatatc gaagaattta gaacttaata aagctactat ttctaacatt ctgaacaact 7740
taaaacacaa gagtttagtt aatgaagtag gagaaggtaa tagtactaaa agtggtggac 7800
gaaagcctat tttactcgaa attaaccaaa aatatggcta ctatatttct atggatttaa 7860
catatgattc cgttgaatta atgtacaact actttgatgc tactatatta aagcaagatt 7920
cctacgaatt aaatgataaa aatgtaagca gtatattaca aatttttaaa tctaataata 7980
acgtctcaga aaaatatgat acgttatatg ggttacttgg tatatctata tccatacacg 8040
gtatcgttga cgatgagcaa aacataatca atcttccttt tcataaaaat gagaaacgca 8100
catttaccga tgaattaaag tcattcacia atgttcctgt cgttatagaa aatgaagcaa 8160
atztatcagc gctatatgaa aaaagtttat atattaattc aaacataaat aatttgatta 8220
ctttaagtat tcacaagggt ataggcgtg gcatcataat aaataaaaaa ctttatcgtg 8280
gctcaaattg agaggctgga gagataggta agacattggg tttggaatct ataaataaca 8340
atgacaacaa atattataaa atcgaagata tatgctccca agacgcttta atacagaaaa 8400
taaataatag gttgggcgtc acattgacgt ttacagaact aatccaatat tacaacgaag 8460
gaaattcaat tgttgctcat gaaattaaac aattttattaa taaaatgaca gttctgattc 8520
ataatttgaa tacacaattt aaccagacg ctattttatat taactgtcct ttaattaatg 8580
aattaccaaa tatttttaaa gaaattaaag agcaattctc ctgtttttct caaggcagtc 8640
caattcaatt acatttaact actaatgtaa aacaagctac tttattgggt ggcactttag 8700
caataatgca aaaaacatta aatataaata acattcaaat gaatattaaa taattacagc 8760
agtctgagtt ataaaataga tatctcggac cgaaacagcc gaataaggct gtttttcttt 8820
tttttatgtt ttagaataag tggctagtt tattcttgac aaaaaataat attttgatat 8880
aattaaatag ttgtcgtttg agacgactga ctttcttatt attcatctaa aatattattt 8940
tgaaaagata acacagttat tcttgacaaa aaaatataaa agtgtataat agaaaagtac 9000
tcgagagtta gtttgtttat taaattaacc aactggacga attcccgggg atccgtcgac 9060
ctgcagccaa gcttgggctt ttcagcctga tacagattaa atcagaacgc agaagcggtc 9120
tgataaaaaca gaatttgcct ggcggcagta gcgcgggtgg cccacctgac cccatgccga 9180
actcagaagt gaaacgccgt agcgccgatg gtagtggtgg gtctcccat gcgagagtag 9240
ggaactgcca ggcacaaat aaaacgaaag gctcagtcga aagactgggc ctttcgtttt 9300
atctgttggt tgtcggtgaa cgctctcctg agtaggacaa atccgcgggg agcggatttg 9360
aacgttgcca agcaacggcc cggagggtgg cgggcaggac gcccgccata aactgccagg 9420
catcaaatta agcagaaggc catcctgacg gatggccttt ttgcgtttct acaaactctt 9480
tttgtttatt tttctaaata cattcaaata tgtatccgct gatccccatc ctatcgatcc 9540
ccacccgatg cccttgagag ccttca 9566

```

<210> 51

<211> 9412

<212> DNA

<213> Artificial Sequence

<220>

<223> pEPEF20

<400> 51

acccgatgcc cttgagagcc ttcaacccag tcagctcctt ccggtgggcg cggggcatga 60  
ctatcgtcgc cgcacttatg actgtcttct ttatcatgca actcgtagga caggtgccgg 120  
cagcgctctg ggtcattttc ggcgaggacc gctttcgtg gagcgcgacg atgatcggcc 180  
tgtcgcttgc ggtattcgga atcttgcacg ccctcgctca agccttcgtc actggtcccg 240  
ccaccaaacg tttcggcgag aagcaggcca ttatcgccgg catggcgggc gacgcgctgg 300  
gctacgtctt gctggcggtc gcgacgcgag gctggatggc cttccccatt atgattcttc 360  
tcgcttccgg cggcatcggg atgcccgcgt tgcaggccat gctgtccagg caggtagatg 420  
acgaccatca gggacagctt caaggatcgc tcgcggtctt taccagccta acttcgatca 480  
ctggaccgct gatcgtcacg gcgatttatg ccgcctcggc gagcacatgg aacgggttgg 540  
catggattgt aggcgccgcc ctataccttg tctgcctccc cgcgttgcgt cgcggtgcat 600  
ggagccgggc cacctcgacc tgaatggaag ccggcggcac ctcgctaacg gattcaccac 660  
tccaagaatt ggagccaatc aattcttgcg gagaactgtg aatgcgcaa ccaacccttg 720  
gcagaacata tccatcgctt ccgccatctc cagcagccgc acgcggcgca tctcgggcag 780  
cggtgggtcc tggccacggg tgcgcatgat cgtgctcctg tcgttgagga cccggctagg 840  
ctggcggggg tgccttactg gttagcagaa tgaatcacg atacgcgagc gaacgtgaag 900  
cgactgctgc tgcaaaacgt ctgcgacctg agcaacaaca tgaatggctt tcggtttccg 960  
tgtttcgtaa agtctggaaa cgcggaagtc ccctacgtgc tgctgaagtt gcccgcaaca 1020  
gagagtggaa ccaaccggtg ataccacgat actatgactg agagtcaacg ccatgagcgg 1080  
cctcatttct tattctgagt tacaacagtc cgcaccgctg tccggtagct ccttccgggtg 1140  
ggcgcggggc atgactatcg tcgccgcact tatgactgtc ttctttatca tgcaactcgt 1200  
aggacaggtg ccggcagcgc ccaacagtc ccgggccacg gggcctgcc ccataccac 1260  
gccgaaacaa gcgccctgca ccattatgtt ccgcatctgc atcgcaggat gctgctggct 1320  
accctgtgga acacctacat ctgtattaac gaagcgctaa ccgtttttat caggctctgg 1380  
gaggcagaat aatgatcat atcgtcaatt attacctca cggggagagc ctgagcaaac 1440  
tggcctcagg catttgagaa gcacacggtc aactgcttc cggtagtcaa taaaccggta 1500  
aaccagcaat agacataagc ggctatttaa cgaccctgcc ctgaaccgac gaccgggtcg 1560  
aatttgcttt cgaatttctg ccattcatcc gcttattatc acttattcag gcgtagcacc 1620  
aggcgtttaa gggcaccaat aactgcctta aaaaaattac gccccgccct gccactcatc 1680  
gcagtactgt tgtaattcat taagcattct gccgacatgg aagccatcac agacggcatg 1740  
atgaacctga atcgccagcg gcatcagcac cttgtcgctt tgcgtataat atttgcccat 1800  
ggtgaaaacg ggggcgaaga agttgtccat attggccacg tttaaataca aactggtgaa 1860  
actcaccagc ggattggctg agacgaaaaa catattctca ataaaccctt tagggaaata 1920  
ggccagggtt tcaccgtaac acgccacatc ttgcgaatat atgtgtagaa actgccggaa 1980  
atcgtcgtgg tattcactcc agagcgatga aaacgtttca gtttgctcat ggaaaacgg 2040  
gtaacaaggg tgaacactat cccatatcac cagctcaccg tctttcattg ccatacgaga 2100  
ggtttgatga ctttgacctt tggtttttaa tttttgaaaa aaataaaaaa aggcgagcc 2160  
tattatatat ttatcatata tattttaatc ttttgttctt ttgctgaaa aaaaaggcag 2220  
tgttttcgct agttatagaa attaaacagt cacaaaaatc gatgtataca gtcacaaaaa 2280  
tcgatttttg tgactctatg catcgatgta tacgagtcac aaaaatcgat gtacacagta 2340  
cgacttttgt atttgtgtac tgtatatagt ataataaaag catagagaaa actcactatg 2400  
aatgacttt ctctatgcta ctactaaaac acgcaaagga gcgtatttat actatgatta 2460  
taccagaaaa acaaaacaaa caaaagcagg tgctgacctt gaatgaatta gaaaaacgca 2520  
aagtagtgga gcataacgct ttaattcaaa gtgtggctaa aatgcaaaaa acagctttta 2580  
aatgtttgga gttagccgtg tcttgtattg ataccgaaga acccccaaaa aataatactg 2640  
tttatctttt aaaatctgaa ctttttaaat tttttgaagt atcgtctagc agtaagcata 2700  
gtcaattcaa agaagcagtt aattatatgc aaaagcaagc ctttttcaat attaaagctg 2760  
ataagaaact aggtattgag tatgaaagca ttgtgcctat tccttatgta aaatggaacg 2820  
attataacga tgaagtaaca atacgttttg accaagccat tatgccctat ctgattgatt 2880  
taaaggcaga atttactcaa tataaaattt ccgaactaca aaaactcaat agcaagtatt 2940  
cgattatttt gtatcgttgg ttatccatga attataacca atacgaacat tacagcgtga 3000  
aagggggacg gagagttgaa caagtggaat cctaccgcaa cccctcaata aaagtgaaag 3060

aattgcgaga	aataactgat	acaataaatg	aacatcaaca	ttttcccat	tttgaaacta	3120
gagtattaaa	aaaagcaatt	gaagaaatca	acgctcacac	ctctttta	gtaacctatg	3180
agaaaaagaa	agcagggcgg	agcattgact	ctattgtctt	tcatattgag	aagaaacgca	3240
tggcagacga	taacagttac	aagttgggag	ataaagacta	tcaagacgat	aaaaagcaaa	3300
aatcaagaaa	tgaagctgac	ttactaaaac	aggcaatgga	aagtaaatat	acaagacttt	3360
tatctgaaaa	tttcttaatt	ggcatgaatg	atattatgga	tacagccaca	atggtaggct	3420
tacagaagaa	tgtttatccg	ctttatgacg	aactgaaaga	attaagaggg	ctaaatgggtg	3480
tcaaagacca	cttgtcttat	gttgccagca	aaaaagaagc	ctattctaaa	cgtaatgtag	3540
cgaaatatct	taaaaaagcc	attgaacaat	atctgccaac	ggttaaaagg	caggacttaa	3600
accatgagtg	aagacttaaa	aacgataaaa	gagttggcgg	acgagctagg	actagctaaa	3660
cagaccgttc	aataccattt	aaagtttttg	ccgaccgaaa	atcgacaaaa	aaacaatagt	3720
ggttcgatcg	tcctaaacct	tgaagaacaa	aagtttatca	aaaaaagact	aacaaaaata	3780
aaaaaagttc	aaccgaccga	aaatcgacaa	gaaaaaatga	agaattaagc	gttaatagtc	3840
ttttgttagg	cggatgagca	ttcatcaggc	gggcaagaat	gtgaataaag	gccggataaa	3900
acttgtgctt	atttttcttt	acggtcttta	aaaaggccgt	aatatccagc	tgaacgggtct	3960
ggttataggt	acattgagca	actgactgaa	atgcctcaaa	atgttcttta	cgatgccatt	4020
gggatatatc	aacggtggta	tatccagtga	tttttttctc	catttttagct	tccttagctc	4080
ctgaaaatct	cgataactca	aaaaatacgc	ccggtagtga	tcttatttca	ttatggtgaa	4140
agttggaacc	tcttacgtgc	cgatcaacgt	ctcatttttcg	ccaaaagttg	gcccagggct	4200
tcccgggtatc	aacagggaca	ccaggattta	tttattctgc	gaagtgatct	tccgtcacag	4260
gtattttattc	ggcgcaaagt	gcgtcgggtg	atgctgccaa	cttactgatt	tagtgtatga	4320
tgggtgttttt	gaggtgctcc	agtggcttct	gtttctatca	gctgtccctc	ctgttcagct	4380
actgacgggg	tgggtgcgtaa	cggcaaaaagc	accgccggac	atcagcgcta	gcggagtgtg	4440
tactggctta	ctatgttggc	actgatgagg	gtgtcagtga	agtgtttcat	gtggcaggag	4500
aaaaaaggct	gcaccgggtgc	gtcagcagaa	tatgtgatac	aggatatatt	ccgcttcctc	4560
gctcactgac	tcgctacgct	cggtcgttcg	actgcggcga	gcggaaatgg	cttacgaacg	4620
gggcgagat	ttcctggaag	atgccaggaa	gatacttaac	agggaagtga	gagggccgcg	4680
gcaaagccgt	ttttccatag	gctccgcccc	cctgacaagc	atcacgaaat	ctgacgctca	4740
aatcagtgg	ggcgaaaccc	gacaggacta	taaagatacc	aggcgtttcc	ccctggcggc	4800
tccctcgtgc	gctctcctgt	tcctgccttt	cggtttaccg	gtgtcattcc	gctgttatgg	4860
ccgcgtttgt	ctcattccac	gcctgacact	cagttccggg	taggcagttc	gctccaagct	4920
ggactgtatg	cacgaacccc	ccgttcagtc	cgaccgctgc	gccttatccg	gtaactatcg	4980
tcttgagtcc	aaccgggaaa	gacatgcaaa	agcaccactg	gcagcagcca	ctggtaattg	5040
atttagagga	gttagtcttg	aagtcatgcg	ccgggttaagg	ctaaactgaa	aggacaagtt	5100
ttggtgactg	cgctcctcca	agccagttac	ctcggttcaa	agagttggta	gctcagagaa	5160
ccttcgaaaa	accgccctgc	aaggcggttt	tttcgttttc	agagcaagag	attacgcgca	5220
gacaaaaacg	atctcaagaa	gatcatctta	ttaatcagat	aaaatatattc	tagatttcag	5280
tgcaatttat	ctcttcaaat	gtagcacctg	aagtcagccc	catacgatat	aagttgtaat	5340
tctcatgttt	gacagcttat	catcgataca	aattccccgt	aggcgctagg	gacctcttta	5400
gcttcttgga	agctgtcagt	agtatatcta	ataatttatac	tccattccct	ttagtaacgt	5460
gtaactttcc	aaatttaaaa	aagcgactca	tagaattatt	tcctcccgtt	aaataataga	5520
taactattaa	aatagacaa	tacttgctca	taagtaatgg	tacttaaat	gtttactttg	5580
gcgtgtttca	ttgcttgatg	aaactgattt	ttagtaaaca	gttgacgata	ttctcgattg	5640
accatttttg	aaacaaagta	cgtatatagc	ttccaatatt	tatctggaac	atctgtggta	5700
tggcgggtaa	gttttattaa	gacactgttt	acttttggtt	taggatgaaa	gcattccgct	5760
ggcagcttaa	gcaattgctg	aatcgagact	tgagtgtgca	agagcaaccc	tagtgttcgg	5820
tgaatatcca	aggtacgctt	gtagaatcct	tcttcaacaa	tcagatagat	gtcagacgca	5880
cggctttcaa	aaaccacttt	tttaataatt	tgtgtgctta	aatggtaagg	aatattccca	5940
acaattttat	acctctgttt	gttagggaa	tgaaactgta	gaatatcttg	gtgaattaaa	6000
gtgacacgag	tattcagttt	taatttttct	gacgataagt	tgaatagatg	actgtcta	6060
tcaatagacg	ttacctgttt	acttatttta	gccagtttcg	tcgttaaatg	ccctttacct	6120
gttccaattt	cgtaaacggg	atcggtttct	tttaaattca	attgttttat	tatttggttg	6180
agtacttttt	cactcggttaa	aaagttttga	gaatatttta	tatttttggt	catgtaatct	6240
ctcctgaagt	gattacatct	ataaacaaat	acagaagtta	aacgatttgt	ttgtaatttt	6300
agttatctgt	ttaaaaagtc	ataagattag	tcactggtag	gaattaatct	aacgtattta	6360



tttatctgcg	taatcactgt	ttttagtctg	tttcaaaaca	gtagatgttt	tatctacatt	6420
acgcatttgg	aataccaaca	tgacgaatcc	ctccttctta	attacaaatt	tttagcatct	6480
aattttaactt	caattcctat	tatacaaaat	tttaagataa	tgcactatca	acacactctt	6540
aagtttgctt	ctaagtctta	tttccataac	ttctttttacg	tttccgccat	tcttttgctgt	6600
ttcgattttt	atgatatggg	gcaagtcagc	acgaacacga	accgtcttat	ctcccattat	6660
atcttttttt	gcactgattg	gtgtatcatt	tcgttttttct	ttttgtgcgc	ctaaatttcc	6720
cacaatcact	cacttctttc	tatttcttct	tattcttatt	ttatcatcaa	caatcacaaa	6780
tcacttgtga	tttgtgataa	gtgatttgtg	ataagtgatt	tgtgattaat	atataaaaagc	6840
cctcttttaa	gggcttttat	gtttattttg	agaaagatat	aaaatcaata	tatccctttt	6900
ccccaatttt	tacaacggca	ttgtagggct	ttttctcttt	gttttttgatt	tcctttttacc	6960
agggtttctt	ttccctccag	taattctttt	acattcgttt	tgggttagttt	tttcttttcta	7020
aaatgttcag	ctaaagtaaa	cttacattca	ggataatttg	aacaaccata	aaacgatttt	7080
tttaatacaa	tattgttgcc	acacttagga	catttttcta	caatactttt	ttctgcttct	7140
ttttctttct	gttcctggta	atcagaaaaa	tttagttttt	ctatatcggt	aggtacagct	7200
tccagtaaat	gaacaatgaa	ttttttgata	ttcgtaataa	agttctcttg	attgccttct	7260
ctttttaccga	tttttttttaa	atacgtttcc	catttagccg	tcatttcagc	actcgttaaa	7320
aggtgctgac	tttcaactgc	ctggcacaat	aatttttctt	tttcagttac	aacagcctgc	7380
aggtcgacga	taaccacata	acagtcataa	aaccactcct	ttttaacaaa	ctttatcaca	7440
agaaatattt	tggcattcta	cgactataac	ttaaatttat	attttttact	ttataatata	7500
taattgatta	tagaataatg	ttgctcatat	cgtttgccaa	catctagtag	tcaaattaca	7560
ctatgttaca	cttggttaata	ttaaccgaac	ttcccctgtc	caaattagat	aagaggtaat	7620
aataaatgga	aaataatttt	atagtaaagt	aaaatgagaa	gcgtgtatta	aaacaaattt	7680
tcaataacag	caatatttca	cgaacacaaa	tatcgaagaa	tttagaactt	aataaagcta	7740
ctattttctaa	cattctgaac	aacttaaaac	acaagagttt	agttaatgaa	gtaggagaag	7800
gtaatagtag	taaaagtggg	ggacgaaagc	ctatttttact	cgaaattaac	caaaaatatg	7860
gctactatat	ttctatggat	ttaacatatg	attccgttga	attaatgtac	aactactttg	7920
atgctactat	attaaagcaa	gattcctacg	aattaaatga	taaaaatgta	agcagtatat	7980
tacaaatttt	aaaatctaata	ataaacgtct	cagaaaaata	tgatacgtta	tatgggttac	8040
ttggtatatc	tatatccata	cacggtatcg	ttgacgatga	gcaaaacata	atcaatcttc	8100
ctttttcataa	aatgagaaa	cgcacattta	ccgatgaatt	aaagtcattc	acaaatgttc	8160
ctgtcgttat	agaaaatgaa	gcaaatttat	cagcgtctata	tgaaaaaagt	ttatatatta	8220
attcaaacat	aaataatttg	attactttta	gtattcacaa	gggtataggc	gctggcatca	8280
taataaataa	aaaactttat	cgtgggtcaa	atggagaggg	tggagagata	ggtaagacat	8340
tggtttttgg	atctataaat	aacaatgaca	acaaatatta	taaaatcgaa	gatatatgct	8400
cccaagacgc	tttaatacag	aaaataaata	ataggttggg	cgtcacattg	acgttttacag	8460
aactaatcca	atattacaac	gaaggaaatt	caattgttgc	tcattgaaatt	aaacaattta	8520
tttaataaaat	gacagttctg	attcataatt	tgaatacaca	atttaaccca	gacgctattt	8580
atattaactg	tcctttaatt	aatgaattac	caaatatttt	aatgaaatt	aaagagcaat	8640
tctcctgttt	ttctcaaggc	agtccaattc	aattacattt	aactactaat	gtaaaacaag	8700
ctactttatt	gggtggcact	ttagcaataa	tgcaaaaaac	attaaatata	aataacattc	8760
aatgaatat	taaataatta	cagcagtctg	agttataaaa	tagatatctc	ggaccgtttc	8820
gtgaactttt	ttgttgacaa	agataaaaaac	acatgatata	cttaaatac	tcgagagtta	8880
gtttgtttat	taaattaacc	aactggacga	attcccgggg	atccgtcgac	ctgcagccaa	8940
gcttgggctt	ttcagcctga	tacagattaa	atcagaacgc	agaagcgggc	tgataaaaca	9000
gaatttgcc	ggcggcgagta	gcgcggtggg	cccacctgac	cccatgccga	actcagaagt	9060
gaaacgccgt	agcgccgatg	gtagtgtggg	gtctcccat	gcgagagtag	ggaactgcca	9120
ggcatcaaat	aaaacgaaag	gctcagtcga	aagactgggc	ctttcgtttt	atctgttggt	9180
tgtcggtgaa	cgctctcctg	agtaggacaa	atccgccggg	agcggatttg	aacgttgcca	9240
agcaacggcc	cggagggtgg	cgggcaggac	gcccgcata	aactgccagg	catcaaatta	9300
agcagaaggc	catcctgacg	gatggccttt	ttgcgttttct	acaaactctt	tttggtttatt	9360
tttctaaata	cattcaaata	tgtatccgct	gatcccccac	ctatcgatcc	cc	9412

<211> 9412  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> pEPEF22

<400> 52

acccgatgcc	cttgagagcc	ttcaacccag	tcagctcctt	ccggtgggcg	cggggcatga	60
ctatcgtcgc	cgcacttatg	actgtcttct	ttatcatgca	actcgtagga	caggtgccgg	120
cagcgctctg	ggtcattttc	ggcgaggacc	gctttcgtcg	gagcgcgacg	atgatcggcc	180
tgtcgcttgc	ggtattcgga	atcttgcacg	ccctcgctca	agccttcgtc	actggtcccg	240
ccaccaaacg	tttcggcgag	aagcaggcca	ttatcgccgg	catggcgggc	gacgcgctgg	300
gctacgtctt	gctggcggtt	gcgacgcgag	gctggatggc	cttccccatt	atgattcttc	360
tcgcttccgg	cggcatcggg	atgcccgcgt	tgcaggccat	gctgtccagg	caggtagatg	420
acgaccatca	gggacagctt	caaggatcgc	tcgcggctct	taccagccta	acttcgatca	480
ctggaccgct	gatcgtcacg	gcgatttatg	ccgcctcggc	gagcacatgg	aacgggttgg	540
catggattgt	aggcgccgcc	ctataccttg	tctgcctccc	cgcgttgctg	cgcggtgcat	600
ggagccgggc	cacctcgacc	tgaatggaag	ccggcggcac	ctcgctaacg	gattcaccac	660
tccaagaatt	ggagccaatc	aattcttgcg	gagaactgtg	aatgcgcaaa	ccaacccttg	720
gcagaacata	tccatcgctg	ccgccatctc	cagcagccgc	acgcggcgca	tctcgggcag	780
cgttggggtcc	tggccacggg	tgcgcgatgat	cgtgctcctg	tcgttgagga	cccggctagg	840
ctggcggggt	tgccttactg	gttagcagaa	tgaatcaccg	atacgcgagc	gaacgtgaag	900
cgactgctgc	tgcaaaacgt	ctgcgacctg	agcaacaaca	tgaatgggtc	tcggtttccg	960
tgtttcgtaa	agtctggaaa	cgcggaagtc	ccctacgtgc	tgctgaagtt	gcccgaaca	1020
gagagtggaa	ccaaccggtg	ataccacgat	actatgactg	agagtcaacg	ccatgagcgg	1080
cctcatttct	tattctgagt	tacaacagtc	cgcaccgctg	tccggtagct	ccttccgggtg	1140
ggcgcggggc	atgactatcg	tcgccgcact	tatgactgtc	ttctttatca	tgcaactcgt	1200
aggacaggtg	ccggcagcgc	ccaacagtcc	cccggccacg	gggcctgcca	ccatacccac	1260
gccgaaacaa	gcgccctgca	ccattatggt	ccggatctgc	atcgcaggat	gctgctggct	1320
accctgtgga	acacctacat	ctgtattaac	gaagcgctaa	ccgtttttat	caggctctgg	1380
gaggcagaat	aatgatcat	atcgtcaatt	attacctcca	cggggagagc	ctgagcaaac	1440
tggcctcagg	catttgagaa	gcacacggtc	acactgcttc	cggtagtcaa	taaaccggta	1500
aaccagcaat	agacataagc	ggctatttaa	cgaccctgcc	ctgaaccgac	gaccgggtcg	1560
aatttgcttt	cgaatttctg	ccattcatcc	gcttattatc	acttattcag	gcgtagcacc	1620
aggcgtttaa	gggcaccaat	aactgcctta	aaaaaattac	gccccgccct	gccactcatc	1680
gcagtactgt	tgtaattcat	taagcattct	gccgacatgg	aagccatcac	agacggcatg	1740
atgaacctga	atcgccagcg	gcacacgac	cttgctgcct	tgcgataaat	atttgcccat	1800
ggtgaaaacg	ggggcgaaga	agttgtccat	attggccacg	tttaaataca	aactggtgaa	1860
actcaccag	ggattggctg	agacgaaaaa	catattctca	ataaaccctt	tagggaaata	1920
ggccaggttt	tcaccgtaac	acgccacatc	ttgcgaatat	atgtgtagaa	actgccggaa	1980
atcgtcgtgg	tattcactcc	agagcgatga	aaacgtttca	gtttgctcat	ggaaaacggt	2040
gtaacaaggg	tgaacactat	cccatatcac	cagctcaccg	tctttcattg	ccatacgaga	2100
ggtttgatga	ctttgacctt	tgggttttaa	tttttgaaaa	aaataaaaaa	aggcgaagcc	2160
tattatatat	ttatcatata	tattttaatc	ttttgttctt	ttgcgtgaaa	aaaaaggcag	2220
tgttttcgct	agttatagaa	attaaacagt	cacaaaaatc	gatgtataca	gtcacaaaaa	2280
tcgatttttg	tgactctatg	catcgatgta	tacgagtcac	aaaaatcgat	gtacacagta	2340
cgacttttgt	atgtgtgtac	tgtatatagt	ataataaaa	catagagaaa	actcactatg	2400
aatgactttt	ctctatgcta	ctactaaaac	acgcaaagga	gcgtatttat	actatgatta	2460
taccagaaaa	acaaaacaaa	caaaagcagg	tgctgacctt	gaatgaatta	gaaaaacgca	2520
aagtagtgga	gcataacgct	ttaattcaaa	gtgtggctaa	aatgcaaaaa	acagctttta	2580
aatgttttga	gttagccgtg	tcttgtattg	ataccgaaga	acccccaaaa	aataatactg	2640
tttatctttt	aaaatctgaa	cttttttaaa	tttttgaaat	atcgtctagc	agtaagcata	2700
gtcaattcaa	agaagcagtt	aattatatgc	aaaagcaagc	ctttttcaat	attaaagctg	2760
ataagaaact	aggtattgag	tatgaaagca	ttgtgcctat	tccttatgta	aatggaacg	2820





gttccaatttt	cgtaaacggt	atcgggtttct	tttaaattca	attgtttttat	tatttggttg	6180
agtacttttt	cactcggttaa	aaagttttga	gaatatttta	tattttttgtt	catgtaatct	6240
ctcctgaagt	gattacatct	ataaacaat	acagaagtta	aacgatttgt	ttgtaatttt	6300
agttatctgt	ttaaaaagtc	ataagattag	tcactggtag	gaattaatct	aacgtattta	6360
tttatctgcg	taatcactgt	ttttagtctg	tttcaaaaaca	gtagatgttt	tatctacatt	6420
acgcattttg	aataccaaca	tgacgaatcc	ctcctttcta	attacaaatt	tttagcatct	6480
aattttaactt	caattcctat	tatacaaaat	tttaagataa	tgcactatca	acacactctt	6540
aagtttgctt	ctaagtctta	tttccataac	ttctttttacg	tttccgccat	tcttttgctgt	6600
ttcgattttt	atgatatggg	gcaagtcagc	acgaacacga	accgtcttat	ctcccattat	6660
atcttttttt	gcactgattg	gtgtatcatt	tcgtttttct	ttttgtgcgc	ctaaatttcc	6720
cacaatcact	cacttctttc	tatttcttct	tattcttatt	ttatcatcaa	caatcacaaa	6780
tcacttggtga	tttgtgataa	gtgatttggt	ataagtgatt	tgtgattaat	atataaaagc	6840
cctcttttaa	gggcttttat	gtttattttg	agaaagatat	aaaatcaata	tatccctttt	6900
ccccaatttt	tacaacggca	ttgtagggct	ttttctcttt	gtttttgatt	tcctttttacc	6960
agggtttctt	ttccctccag	taattctttt	acattcgttt	tggttagttt	tttctttcta	7020
aaatgttcag	ctaaagtaaa	cttacattca	ggataatttg	aacaaccata	aaacgatttt	7080
tttaatacaa	tattgttgcc	acacttagga	catttttcta	caatactttt	ttctgcttct	7140
ttttctttct	gttcctggta	atcagaaaaa	tttagttttt	ctatatcggt	aggtacagct	7200
tccagtaaat	gaacaatgaa	ttttttgata	ttcgtaataa	agttctcttg	attgccttct	7260
cttttaccga	ttttttttta	atacgtttcc	catttagccg	tcatttcagc	actcgttaaa	7320
aggtgctgac	tttcaactgc	ctggcacaa	aattttcctt	tttcagttac	aacagcctgc	7380
aggtcgacga	taaccacata	acagtcataa	aaccactcct	ttttaacaaa	ctttatcaca	7440
agaaatattt	tggcatttcta	cgactataac	ttaaatttat	attttttact	ttataatata	7500
taattgatta	tagaataatg	ttgctcatat	cgtttgccaa	catctagtag	tcaaattaca	7560
ctatgttaca	cttggttaata	ttaaccgaac	ttccctgtc	caaattagat	aagaggtaat	7620
aataaatgga	aaataatttt	atagtaaatg	aaaatgagaa	gcgtgtatta	aaacaaattt	7680
tcaataacag	caatattttca	cgaacacaaa	tatcgaagaa	tttagaactt	aataaagcta	7740
ctattttctaa	cattctgaac	aacttaaaac	acaagagttt	agttaatgaa	gtaggagaag	7800
gtaatagtag	taaaagtggg	ggacgaaagc	ctatttttact	cgaaattaac	caaaaatatg	7860
gctactatat	ttctatggat	ttaacatatg	attccggtga	attaatgtac	aactactttg	7920
atgctactat	attaaagcaa	gattcctacg	aattaaatga	taaaaatgta	agcagtatat	7980
tacaaatttt	aaaatcta	ataaacgtct	cagaaaaata	tgatacgtta	tatgggttac	8040
ttggtatatc	tatatccata	cacggtatcg	ttgacgatga	gcaaaacata	atcaatcttc	8100
cttttcataa	aatgagaaa	cgcacattta	ccgatgaatt	aaagtcattc	acaaatgttc	8160
ctgtcgttat	agaaaaatgaa	gcaaattttat	cagcgcctata	tgaaaaaagt	ttatatatta	8220
attcaa	aaataatttg	attactttta	gtattcacaa	gggtataggc	gctggcatca	8280
taataaataa	aaaactttat	cgtggctcaa	atggagaggg	tggagagata	ggtaagacat	8340
tggtttttga	atctataaat	aacaatgaca	acaaatatta	taaaatcgaa	gatatatgct	8400
cccaagacgc	tttaatacag	aaaataaata	ataggttggg	cgtcacattg	acgtttacag	8460
aactaatcca	atattacaac	gaaggaaatt	caattgttgc	tcatgaaatt	aaacaattta	8520
ttaataaaaat	gacagttctg	attcataatt	tgaatacaca	atttaaccca	gacgctat	8580
atattaactg	tcctttaatt	aatgaattac	caaataattt	aatgaaatt	aaagagcaat	8640
tctcctgttt	ttctcaaggc	agtccaattc	aattacattt	aactactaat	gtaaaacaag	8700
ctactttatt	gggtggcact	ttagcaataa	tgcaaaaaac	attaaatata	aataacattc	8760
aatgaatat	taaataatta	cagcagtctg	agttataaaa	tagatatctc	ggaccgtttc	8820
gtgaactttt	ttgttgacaa	agataaaaac	acatgatata	attaaatcac	tcgagagtta	8880
gtttgtttat	taaattaacc	aactggacga	attcccgggg	atccgtcgac	ctgcagccaa	8940
gcttgggctt	ttcagcctga	tacagattaa	atcagaacgc	agaagcggtc	tgataaaaca	9000
gaatttgcc	ggcggcgagta	gcgcgggtgg	cccacctgac	cccatgccga	actcagaagt	9060
gaaacgccgt	agcgccgatg	gtagtgtggg	gtctcccat	gcgagagtag	ggaactgcc	9120
ggcatcaaat	aaaacgaaag	gctcagtcga	aagactgggc	ctttcgtttt	atctgttgtt	9180
tgtcggtgaa	cgctctcctg	agtaggacaa	atccgccggg	agcggatttg	aacgttgcca	9240
agcaacggcc	cggagggtgg	cgggcaggac	gcccgccata	aactgccagg	catcaaatta	9300
agcagaaggc	catcctgacg	gatggccttt	ttgcgtttct	acaaactctt	tttgtttatt	9360
tttctaata	cattcaaata	tgtatccgct	gatcccatc	ctatcgatcc	cc	9412

<210> 53  
 <211> 6852  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> pXyl-T5-DD p15a

<400> 53  
 tggcattcta cgactataac tttaaatttat attttttact ttataatata taattgatta 60  
 tagaataatg ttgctcatat cgtttgccaa catctagtag tcaaattaca ctatgttaca 120  
 cttggtaata ttaaccgaac ttcccctgtc caaattagat aagaggtaat aataaatgga 180  
 aaataatttt atagtaaagtg aaaatgagaa gcgtgtatta aaacaaattt tcaataacag 240  
 caatatattca cgaacacaaa tatcgaagaa tttagaactt aataaagcta ctattttctaa 300  
 cattctgaac aacttaaaac acaagagttt agttaatgaa gtaggagaag gtaatagtag 360  
 taaaagtggg ggacgaaagc ctattttact cgaaattaac caaaaatatg gctactatat 420  
 ttctatggat ttaacatatg attccgttga attaatgtac aactactttg atgctactat 480  
 attaaagcaa gattcctacg aattaaatga taaaaatgta agcagtatat taaaaatttt 540  
 aaaatcctaat ataaacgtct cagaaaaata tgatacgtta tatggggttac ttggtatatc 600  
 tatatccata cacggtatcg ttgacgatga gcaaaacata atcaatcttc cttttcataa 660  
 aaatgagaaa cgcacattta ccgatgaatt aaagtcattc acaaatgttc ctgtcgttat 720  
 agaaaatgaa gcaaatttat cagcgctata tgaaaaaagt ttatatatta attcaaacat 780  
 aaataatttg attactttta gtattcacaa gggatataggc gctggcatca taataaataa 840  
 aaaactttat cgtgggtcaa atgggagaggc tggagagata ggtaagacat tggttttgga 900  
 atctataaat aacaatgaca acaaatatta taaaatcgaa gatatatgct cccaagacgc 960  
 tttaatacag aaaataaata atagggtggg cgtcacattg acgtttacag aactaatcca 1020  
 atattacaac gaaggaaatt caattgttgc tcatgaaatt aaacaattta ttaataaaat 1080  
 gacagttctg attcataatt tgaatacaca atttaaccca gacgctatct atattaactg 1140  
 tcctttaatt aatgaattac caaatatttt aaatgaaatt aaagagcaat tctcctgttt 1200  
 ttctcaaggc agtccaattc aattacattt aactactaat gtaaaacaag ctactttatt 1260  
 ggggtggcact ttagcaataa tgcaaaaaac attaaatata aataacattc aaatgaatat 1320  
 taaataatta cagcagtctg agttataaaa tagatatctc ggaccgtcat aaaaaattta 1380  
 ttttacatca ggaaaatttt tctgtatatatt agattcaagt tagttttgttt attaaattaa 1440  
 ccaactaaaa tgtagaattc gagctcggta cccggggatc ctctagagtc gacctgcagc 1500  
 caagcttggg cttttcagcc tgatacagat taaatcagaa cgcagaagcg gtctgataaa 1560  
 acagaatttg cctggcggca gtagcgcggt ggtcccacct gaccccatgc cgaactcaga 1620  
 agtgaaacgc cgtagcgccg atggtagtgt ggggtctccc catgcgagag tagggaactg 1680  
 ccaggcatca aataaaacga aaggctcagt cgaaagactg ggcctttcgt tttatctgtt 1740  
 gtttgctcggg gaacgctctc ctgagtagga caaatccgcc gggagcggat ttgaacggtg 1800  
 cgaagcaacg gcccgaggag tggcggggcag gacgcccgcg ataaactgcc aggcatacaa 1860  
 ttaagcagaa ggccatcctg acggatggcc tttttgcgtt tctacaaact ctttttgttt 1920  
 atttttctaa atacattcaa atatgtatcc gctgatcccc atcctatcga tgataagctg 1980  
 tcaaacatga gaattaaatc aatctaaagt atatatgagt aaacttggtc tgacagttac 2040  
 caatgcttaa tcagtgaggc acctatctca gcgatctgtc tatttcgttc atccatagtt 2100  
 gcctgactcc ccgtcgtgta gataactacg atacgggagg gcttaccatc tggccccagt 2160  
 gctgcaatga taccgcgaga cccacgctca ccggctccag atttatcagc aataaaccag 2220  
 ccagccggaa gggccgagcg cagaagtggg cctgcaactt tatccgcctc catccagtct 2280  
 attaattggt gccgggaagc tagagtaagt agttcgccag ttaatagttt gcgcaacggt 2340  
 gttgccattg ctacaggcat cgtgggtgtc cgctcgtcgt ttggtatggc ttcattcagc 2400  
 tccggttccc aacgatcaag gcgagttaca tgatcccca tggtgtgcaa aaaagcgggt 2460  
 agtccttcg gtcctccgat cgttgtcaga agtaagttgg ccgcagtgtt atcactcatg 2520  
 gttatggcag cactgcataa ttctcttact gtcatgccat ccgtaagatg cttttctgtg 2580



actggtgagt	actcaaccaa	gtcatttctga	gaatagtgtgta	tgcggcgacc	gagttgctct	2640
tgcccggcgt	caacacggga	taataccgcg	ccacatagca	gaactttaaa	agtgtctatc	2700
attggaaaac	gctcttcggg	gcgaaaactc	tcaaggatct	taccgctgtt	gagatccagt	2760
tcgatgtaac	ccactcgtgc	acccaactga	tcttcagcat	cttttacttt	caccagcgtt	2820
tctgggtgag	caaaaacagg	aaggcaaaat	gccgcaaaaa	agggaataag	ggcgacacgg	2880
aaatggtgaa	tactcatact	cttccttttt	caatattatt	gaagcattta	tcaggggttat	2940
tgtctcatga	gcggatacat	atgtgaatgt	atthagaaaa	ataaacaat	aggggttccg	3000
cgcacatttc	cccgaagaat	gccacctggc	ggccgcataa	gatgatcttc	ttgagatcgt	3060
tttgggtctgc	gcgtaatctc	ttgctctgaa	aacgaaaaaa	ccgccttgca	gggagggtttt	3120
tcgaagggttc	tctgagctac	caactctttg	aaccgaggta	actggcttgg	aggagcgcag	3180
tcaccaaaac	ttgtcctttc	agtttagcct	taaccggcgc	atgacttcaa	gactaactcc	3240
tctaaatcaa	ttaccagtgg	ctgctgccag	tggtgctttt	gcatgtcttt	ccgggttgga	3300
ctcaagacga	tagttaccgg	ataaggcgca	gcggctcggac	tgaacggggg	gttcgtgcat	3360
acagtccagc	ttggagcgaa	ctgcctaccc	ggaactgagt	gtcaggcgtg	gaatgagaca	3420
aacgcggcca	taacagcgga	atgacaccgg	taaaccgaaa	ggcaggaaca	ggagagcgca	3480
cgagggagcc	gccaggggaa	acgcctggta	tctttatagt	cctgtcgggt	ttcgccacca	3540
ctgatttgag	cgtcagatct	cgtgatgctt	gtcagggggg	cggagcctat	ggaaaaacgg	3600
ctttgccgcg	gccctctcac	ttccctgtta	agtatcttcc	tggcatcttc	caggaaatct	3660
ccgccccggt	cgtaagccat	ttccgctcgc	cgcagtcgaa	cgaccgagcg	tagcgagtca	3720
gtgagcgagg	aagcgggaata	tatcctgtat	cacatattct	gctgacgcac	cgggtgcagcc	3780
ttttttctcc	tgccacatga	agcacttcac	tgacaccctc	atcagtgcc	acatagtaag	3840
ccagtgcggc	cgttcttttc	ctgcgttatc	ccctgattct	gtggataacc	gtattaccgc	3900
ctttgagtga	gctgataccg	ctcgcgcgag	ccgaacgacc	gagcgcagcg	agtcagttag	3960
cgaggaagcg	gaagagcgcc	tgatgcggta	ttttctcctt	acgcctctgt	gcggtatttc	4020
acaccgcata	agatcccctc	gacctgcagg	catgcaagct	tctgtagggt	tttaggcata	4080
aaactatatg	atttaccctt	aaatctttta	aatgcccctt	aaaattcaaa	ataaaggcat	4140
ttaaaattta	aatattttct	gtgataaagt	ttgttaaaaa	ggagtgggtt	tatgactgtt	4200
atgtgggttat	cgattatagg	tatgtgggtt	tgtattggaa	tggcattttt	tgctatcaag	4260
gttattaaaa	ataaaaatta	gaccacgcat	ttatgccgag	aaaattttat	gtgcgttgag	4320
aagaaccctt	aactaaactt	gcagacgaat	gtcggcatag	cgtgagctat	taagccgacc	4380
attcgacaag	ttttgggatt	gttaagggtt	ccgaggctca	acgtcaataa	agcaattgga	4440
ataaagaagc	gaaaaaggag	aagtcgggtt	agaaaaagaa	ggatatggat	ctggagctgt	4500
aatataaaaa	ccttcttcaa	ctaacggggc	agggttagtga	cattagaaaa	ccgactgtaa	4560
aaagtacagt	cggcattatc	tcatattata	aaagccagtc	attaggccta	tctgacaatt	4620
cctgaataga	gttcataaac	aatcctgcat	gataaccatc	acaaacagaa	tgatgtacct	4680
gtaaagatag	cggtaaatat	attgaattac	ctttattaat	gaattttcct	gctgtaataa	4740
tgggtagaag	gtaattacta	ttattattga	tatttaagtt	aaaccagta	aatgaagtcc	4800
atggaataat	agaaagagaa	aaagcatttt	caggatatagg	tgttttgagg	aacaatttcc	4860
ccgaaccatt	atattttctc	acatcagaaa	ggtataaatc	ataaaactct	ttgaagtcac	4920
tctttacagg	agtcctaaata	ccagagaatg	ttttagatac	accatcaaaa	attgtataaa	4980
gtggctctaa	cttatcccaa	taacctact	ctccgtcgtc	attgtaacca	gttctaaaag	5040
ctgtatttga	gtttatcacc	cttgtcacta	agaaaataaa	tgcagggtaa	aatttatatc	5100
cttcttggtt	tatgtttcgg	tataaaacac	taatatcaat	ttctgtgggt	atactaaaag	5160
tcgtttgttg	gttcaaataa	tgattaaata	tctcttttct	cttccaattg	tctaaatcaa	5220
ttttattaaa	gttcatttga	tatgcctcct	aaatttttat	ctaaagtga	tttaggaggc	5280
ttacttgtct	gctttcttca	ttagaatcaa	tcttttttta	aaagtcaata	ttactgtaac	5340
ataaatatat	attttaaaaa	tatcccactt	tatccaattt	tcgtttgttg	aactaatggg	5400
tgcttttagtt	gaagaataaa	gaccacatta	aaaaatgtgg	tcttttgtgt	ttttttaaag	5460
gatttgagcg	tagcgaaaaa	tccttttctt	tcttatcttg	ataataaggg	taactattgc	5520
cggcgaggct	agttaccctt	aagttattgg	tatgactggg	tttaagcgca	aaaaaagttg	5580
ctttttcgta	cctattaatg	tatcgtttta	aatgactagt	aaaaaacata	catagaaagg	5640
ggaaaaagca	acttttttta	ttgtcatagt	ttgtgaaaac	taagttgttt	ttatgtgtta	5700
taacatggaa	aagtatactg	agaaaaaca	aagaaatcaa	gtattttcaga	aatttattaa	5760
acgtcatatt	ggagagaatc	aaatggattt	agttgaagat	tgcaatacat	ttctgtcttt	5820
tgtagctgat	aaaacttttag	aaaaacagaa	attatataaa	gctaattctt	gtaaaaatcg	5880



```

atcttgcct gtctgtgctt ggagaaaagc tagaaaagat gcattggggtt tatctttgat 5940
gatgcaatat attaagcagc aagagaaaaa ggagtttatc tttttaactt tgactacacc 6000
taatgtaatg agtgatgaat tagaaaatga aataaaacgt tataataatt ctttttagaaa 6060
acttataaag agaaaaaaag taggtagtgt tataaaggga tatgttcgta agttagagat 6120
tacatataat aaaaaaagag atgattataa tcctcatttt catgtgttaa ttgcagtaaa 6180
taaatcgtat ttcacagata aaagatatta tattagccaa caagaatggg tagatttatg 6240
gcgtgatgta acgggcattt cagaaataac acaagttcaa gttcaaaaaa taagacaaaa 6300
taataataaa gaattatatg aaatggctaa gtattctggg aaagatagtg attatttaat 6360
aaataaatca aaaagtcttt gatgcatttt ataaatcact taaaggtaaa caggtattag 6420
tttattcagg attatttaaa gaggctaaaa agaaattaaa aaatggggat ttagattact 6480
taaaagaaat tgatccaacc gtaatatatc tatcaaattt tttatatattg gaaacaaaaa 6540
gagtatttag ctagtgaact ttatgactta acagaacaag aaaaaagaga aattaatcac 6600
aaaatgatag acgaaatcga ggaagaacaa taacaaaata taagtgttaa cagtcgtctg 6660
caagtttagt taagggttct tctcaacgca caataaattt tctcggcata aatgcgtggg 6720
ctaattttta tttttaataa ccttgatagc aaaaaatgcc attccaatac aaaaccacat 6780
acctataatc gataaccaca taacagtcac aaaaccactc ctttttaaca aactttatca 6840
caagaaatat tt 6852

```

```

<210> 54
<211> 16
<212> DNA
<213> Artificial Sequence

```

```

<220>
<223> OR1 operator sequence

```

```

<400> 54
tatcaccgca gaggtg 16

```

```

<210> 55
<211> 17
<212> DNA
<213> Artificial Sequence

```

```

<220>
<223> OR2 operator sequence

```

```

<400> 55
taacaccgtg cgtgttg 17

```

```

<210> 56
<211> 17
<212> DNA
<213> Artificial Sequence

```

```

<220>
<223> OR3 operator sequence

```

```

<400> 56
tatcaccgca agggata 17

```

```

<210> 57
<211> 17

```

<212> DNA  
<213> Artificial Sequence

<220>  
<223> OL1 operator sequence

<400> 57  
tatcaccgcc agtggtg 17

<210> 58  
<211> 17  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> OL2 operator sequence

<400> 58  
tatctctggc ggtggtg 17

<210> 59  
<211> 17  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> OL3 operator sequence

<400> 59  
tatcaccgca gatgggtt 17

<210> 60  
<211> 15  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> MalM operator sequence

<400> 60  
cgcaaactgt tgcgt 15

<210> 61  
<211> 14  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> MalX operator sequence

<400> 61  
cgcaaactgt ttgg 14

<210> 62  
<211> 38

<212> DNA  
<213> Escherichia coli

<400> 62  
actttatcac tgataaaca acttatcagt gataaaga 38

<210> 63  
<211> 38  
<212> DNA  
<213> Escherichia coli

<400> 63  
actctatcat tgatagagtt ccctatcagt gatagaga 38

<210> 64  
<211> 38  
<212> DNA  
<213> Plasmid pSC101

<400> 64  
agcttatcat cgataagcta gtttatcaca gttaaatt 38

<210> 65  
<211> 39  
<212> DNA  
<213> Salmonella

<400> 65  
actctatcat tgataaggga actctatcaa tgataggga 39

<210> 66  
<211> 38  
<212> DNA  
<213> Transposon Tn10

<400> 66  
aatctatcac tgatagagta ccctatcatc gatagaga 38

<210> 67  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Trp O operator sequence

<400> 67  
cgaactagtt aactagtacg 20

<210> 68  
<211> 29  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Xyl 0 operator sequence

<400> 68

agttagtttg tttattaaat taaccaact

29

[illegible]